DOCUMENT RESUME

ED 145 142	08	CE 012 743

TITLE	The Effect of a Career Orientation Program on the Career Development and Academic Achievement of Students in Selected Middle Schools of Danville, Virginia. Final Report.
INSTITUTION	Danville Public Schools, Va.
SPONS AGENCY	Bureau of Occupational and Adult Education (DHEW/OE), Washington, D.C.
PUB DATE	Jul 77
NOTE	232p.; Parts of appendixes may be marginally legible due to print quality of original
EDRS PRICE	MF-$0.83 HC-$12.71 Plus Postage.
DESCRIPTORS	*Academic Achievement; *Career Awareness; *Career Education; *Career Planning; Demonstration Projects; Intermediate Grades; Middle Schools; *Program Effectiveness; Program Evaluation; Student Evaluation; *Vocational Development
IDENTIFIERS	Virginia; *Virginia (Danville)

ABSTRACT

A study was conducted to determine the effect of the locally developed program of career orientation implemented in the Danville, Virginia, middle schools in August 1976, on the career development and academic achievement of students in grades 5, 6, and 7. A quasi-experimental pretest-posttest control group design was used for the evaluation, and comparison groups were established for each of the three grade levels. Control groups were determined by the random selection of one classroom per grade level from each of the two schools involved, numbering 43 fifth graders, 49 sixth graders, and 48 seventh graders. Experimental groups were established by the random selection of 50 students from the remaining grade level populations. Instruments used to collect data relative to the eight null hypotheses of the study were the Career Maturity Inventory, used for testing career development aspects, and subtests of the Blue Level of SRA's (Science Research Associates) "Achievement Series," used to test for improvements in social studies, mathematics, and science. One of the major conclusions was that the career orientation program, as implemented and as measured by the instruments used, did not appear to affect the career development nor the academic achievement of the middle school students who received the treatment during the 1976-77 school year. Recommendations were made to place greater emphasis on the program, and to conduct further research, follow-up studies, and extensive inservice teacher education. (TA)

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ED145142

Final Report

THE EFFECT OF A CAREER ORIENTATION PROGRAM ON THE CAREER DEVELOPMENT AND ACADEMIC ACHIEVEMENT OF STUDENTS IN SELECTED MIDDLE SCHOOLS OF DANVILLE, VIRGINIA

Exemplary Project in Vocational Education
Conducted Under Part C, Section 131-B
Public Law 90-576

Jack R. Lewis, Jr.
Danville Public Schools
313 Municipal Building
Danville, Virginia 24541

July, 1977

U S DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
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Chapter 1

INTRODUCTION

For the past five years the Danville School Board, Danville, Virginia, has been committed to the development of a quality career and vocational education program. The school board formulated a policy statement (6.12) in 1976 on career and vocational education which reads:

> The Danville School Board endorses the concept of career and vocational education from kindergarten through the secondary level. In addition, the board feels that occupational preparatory programs for adults are an integral part of the school division's responsibility to the citizens of Danville.
>
> Therefore, the Danville School Board supports career awareness activities in the elementary schools, career orientation in the middle schools, career exploration courses in grades 8-10, occupational preparatory programs in grades 10-12 and adult programs for the purpose of trade extension and trade preparation.

During the past four years most of the emphasis in the career and vocational education program has been devoted to the occupational preparatory courses at the senior high school and the career exploratory courses based in grades eight through ten. During the 1975-76 school year, however, much of the emphasis was channeled toward the development of a career orientation program at the middle school level (grades five, six and seven).

The middle school effort was initiated with the establishment of a planning team of teachers, school administrators and central office staff in the fall of 1975. The teachers involved represented the aforementioned grade levels from the four middle schools in Danville. The teachers were evenly divided according to the two main instructional blocks taught in these schools. These instructional blocks were language arts-social studies and mathematics-science-health. The school administrators on the planning team were either middle school principals or assistant principals. Central office staff members on the team were the Director of Instruction, Director of Elementary Education, Coordinator of Middle School Education and the Director of Career and Vocational Education, Adult and Continuing Education.

During the course of the planning team's work, the career orientation program was designed to be integrated with the social studies portion of the language arts-social studies curriculum and the total mathematics-science-health curriculum. The members of the planning team felt that the development of an integrated language arts-career orientation guide was beyond their capabilities; therefore, no work was done in the area of language arts. Once this decision was made, the planning team started rewriting the existing social studies curriculum guide and developing correlated career orientation guides for the mathematics-science-health blocks. All these newly developed guides included suggested career orientation methods, teaching strategies and techniques for teaching the regular subject matter on an infused basis.

The final phase of the program development culminated in a teaching aids selection workshop which was held during the last week of June, 1976. The participants in this workshop were all middle school personnel, and many had been members of the planning team. In addition to classroom teachers, librarians from each of the four middle schools were also present.

The workshop participants screened career education materials and media from twelve different sources. The selected materials were then purchased and included in the recently developed guides as suggested materials and aids for the program. In essence the career orientation program was made up of the suggested career orientation methods, teaching strategies, techniques, materials and aids which could be used to enrich the regular subject matter.

With the developmental aspects of the program completed, the central office staff decided that the program should be evaluated during the 1976-77 school year. A local evaluation committee was organized during July, 1976, to determine the design of the evaluation study. The design will be discussed more thoroughly in Chapter 3. The evaluation committee was made up of the following administrators: 1) Assistant Superintendent for Research and Federal Programs, 2) Director of Instruction, 3) Coordinator for Middle School Education, 4) Principal of Edwin A. Gibson Middle School and 5) Principal of Irvin W. Taylor Middle School.

The Danville School Board approved both the career orientation program and the planned evaluation study at its regular meeting in August, 1976. The program was implemented later during the same month and continued throughout the 1976-77 school year.

JUSTIFICATION OF STUDY

Although many large scale career education projects have been conducted in the nation and in the state of Virginia, very little research has been done on the effect of career education programs on academic achievement.

It was hoped that the findings and conclusions of this and similar studies would be instrumental in promoting and developing a climate in which local school administrators and teachers would undertake the development of career orientation programs. The researcher was also hopeful that this study would pave the way for the local development of high quality career education programs at nominal cost.

STATEMENT OF THE PROBLEM

During the early days of career education most of the first programs were developed by using a unit approach. Many different career education curriculum units were developed at the various grade levels. Career education was seen by many as a separate subject to be taught by the elementary teacher. This researcher has witnessed report cards used by school divisions which included a separate grade report for career education. In the past few years, however, this approach has given way to the infusion of career education with the regular school subjects, especially at the elementary and middle school levels.

The infusion approach has been found to be much more acceptable than the unit approach to educators at all levels. It is more difficult to develop an infused program, however, and the career education aspect of the curriculum is not nearly as visible as the unit approach.

The career orientation program developed for middle school students of Danville, Virginia, was developed through an infusion of career education principles with social studies and the mathematics-science-health blocks. The basis for this approach was that a career orientation program in which the subject matter was made relevant to the work world would 1) enhance the students' career development, and 2) heighten academic achievement.

The following problem was addressed in this study: "Does the career orientation program, as designed, improve the career development and heighten the academic achievement of the middle school students?" This study attempted to determine the effect of the infused career orientation program on the career development and academic achievement of students in selected middle schools of Danville, Virginia.

THE HYPOTHESES

In order to test the statistical significance of the findings of this study, the following eight hypotheses were developed and stated in the null form. Each of the eight were tested at the fifth, sixth and seventh grade levels.

1. There will be no difference in the degree of change in the career choice attitudes of students participating in the program and those who do not.

2. There will be no difference in the degree of change in self-appraisal relative to careers between students participating in the program and those who do not.

3. There will be no difference in the degree of change in knowledge of occupations between students participating in the program and those who do not.

4. There will be no difference in the degree of change in job choosing skills relative to capabilities between students participating in the program and those who do not.

5. There will be no difference in the degree of

change in planning skills relative to goals between students participating in the program and those who do not

6. There will be no difference in the degree of change in social studies achievement between students participating in the program and those who do not.

7. There will be no difference in the degree of change in mathematics achievement between the students participating in the program and those who do not.

8. There will be no difference in the degree of change in science achievement between students participating in the program and those who do not.

LIMITATIONS OF THE STUDY

Certain limitations of the study follow:

1. Although the career orientation program was implemented in all four of Danville's middle schools during the 1976-77 school year, the study was limited to two of these schools. The study was conducted utilizing the student population of the Edwin A. Gibson Middle School and the Irvin W. Taylor Middle School. This limitation was necessary because a research and evaluation project on value clarification was being conducted in the remaining two schools. The evaluation committee felt that the value clarification investigation would have an effect on instruction resulting in a possible

contamination of the data for this study.

2. This Research was limited to effect upon students enrolled at the two schools. No attempt was made to study the effect of the program on teachers, administrators or parents. Furthermore, no attempt was made to study the effect of the program by race or sex of the students.

3. The design of the study produced a limitation relative to random sampling procedure. There was a reluctance on the part of school administrators to permit true random selection of students for the control groups. This limitation in random selection occurred because the master schedules and class assignments had already been planned and would have been difficult to change. Hence, control groups were determined by randomly selecting a previously designated class from each grade level in each of the two schools. These two classes from each grade level (one from each school) were then treated as one control group per grade level for the purposes of the study. Therefore, the study was rendered quasi-experimental and its findings considered to be limited as to their generalizability beyond the population of the two Danville, Virginia, middle schools involved in the study.

4. Teachers could not be randomly selected for the control group classes but were necessarily accepted with the previously assigned classes as designated by the two

school principals. This situation was unavoidable because of conflicts which would have developed in the scheduling of randomly selected teachers.

5. The instrument used for gathering data in the acedemic areas of instruction did not include a subtest for health. Since the health curriculum was very much integrated with the science portion of that instructional block, the evaluation committee felt that health knowledge would be sufficiently reflected in the science subtest for the purposes of the study. Consequently, the study was limited to an assessment of academic achievement in the areas of social studies, mathematics and science.

6. Although the science achievement portion of Science Research Associates' test normally included sixteen double scored items from the reading comprehension test of the battery for its total raw score, the consensus of the evaluation committee was that the forty items of the science test were sufficient in number for the purposes of the study. Therefore, the reading comprehension test was not administered.

7. The investigation for this study was limited to a study of career development and academic achievement during the 1976-77 school year.

ASSUMPTIONS

A number of basic assumptions were necessary to the design of this study. These assumptions are presented here in an effort to provide additional information regarding the foundations of the study. The assumptions were:

1. The control and experimental groups of the respective grade levels are equal, and the participants are representative of their grade level populations.

2. The strengths and weaknesses in teaching variability have an equal chance of occurring in both control and experimental groups at each grade level.

3. The instruments used in the study are reliable and valid. (Chapter 3. includes a discussion of the instruments used to collect the data.)

4. Appreciable differences found between control and experimental groups in career development or academic achievement are due to the treatment.

DEFINITIONS OF TERMS

The definitions of the basic terms used in the study were as follows:

1. Career Education--"...the totality of experiences through which one learns about and prepares to engage in work as part of her or his way of living"(Hoyt, 1974:5).

2. Vocational Education--Educational training which provides the skills, practical experiences, understandings, attitudes and work habits needed by people to enter and make progress in employment.

3. Career Orientation--The experiences and understandings provided students at grades five, six and seven which were designed to help students understand themselves better with respect to career aptitude, interests and opportunities.

4. Middle Schools--Danville Public Schools which enroll grades five, six and seven.

5. Career Development--"A continuous, developmental process, a sequence of choices which form a pattern throughout one's lifetime and which represent one's self-concept" (Stevenson, 1973:323).

6. Work World--"The breadth of career opportunities and the unique aspects of occupations in relationship to an individual preparing to make a career decision" (Stevenson, 1973:329).

7. Evaluation Committee--A local committee composed of five administrators of the Danville Public Schools who were familiar with the overall organization and operation of the division's four middle schools and who planned the design for this study.

ORGANIZATION OF THE REMAINDER OF THE REPORT

A review of the related literature which includes a discussion of the career education movement, the career development concept and similar research studies are presented in Chapter 2. Methods and procedures including design, controls, collection of the data, the treatment, monitoring of the treatment, testing procedures and analysis of the data are discussed in Chapter 3. The descriptive and statistical analysis of the data are reported in Chapter 4. A summary of the findings, the conclusions and recommendations are presented in Chapter 5.

SUMMARY

The Danville City School Board has promoted career education as a part of the total educational program for the past several years. During the past five years a complete occupational preparatory program has been established at the senior high school, an extensive career exploratory program has been implemented in the city's two junior high schools, and a career orientation program has been developed and implemented in the four middle schools.

The purpose of this study was to determine the effect of the locally developed program of career orientation implemented in the Danville middle schools in August

1976, on the career development and academic achievement of students in grades five, six and seven. In order to test the statistical significance of the findings of this study, eight hypotheses were stated. Also, seven known limitations and four basic assumptions were described for further delineation of the problem.

Chapter 2

REVIEW OF THE RELATED LITERATURE

Few educational concepts have enjoyed as much widespread acceptance as career education. In just a few short years school divisions, individual schools, and thousands of teachers have applauded the concept and attempted to implement it in instructional situations.

Some funding has been made available nationally and on a state basis in order to provide an incentive. Across the nation, however, much of the effort has been financed locally. A great deal of local support has been forthcoming because educators and the citizens who share the costs of such programs have accepted the concept of career education.

The review of the related literature was developed around three main topics: 1) the career education movement, 2) the career development concept, and 3) studies relating to career development and the effect of career education programs on academic achievement and/or career maturity.

THE CAREER EDUCATION MOVEMENT

Although career education is a relatively new term, the principles and concepts upon which it is based will be found in the writings of educators throughout history.

However, the new emphasis on career education is something very recent.

Keller described career education as a new thrust for curriculum and instruction, and she cited the following four reasons for its emergence:

> 1. The philosophical commitment to an absolute separation of academic domains—academic, general, and vocational—has softened somewhat.
> 2. Social and economic problems of the past decade have painfully highlighted the inadequacy of previous approaches.
> 3. New legislation and funding in the 1960's gave impetus to vocational education and brought wide attention to bear on the school's approach to the world of work.
> 4. Research and development sponsored by the U.S. Office of Education moved beyond the domain of vocational education and gave initiative to a comprehensive approach to the world of work—career education (1972:1).

The U.S. Office of Education first introduced career education on a large scale in a speech which was given before the National Association of Secondary School Principals, in Houston, Texas, on January 23, 1971. In this speech Dr. Sidney Marland, then U.S. Commissioner of Education, declared career education as among his highest prioritees. Since the day of this speech, career education has enjoyed much attention nationally. Many educational writers have sought to define and explain it, professional and business organizations have published position papers on the concept and millions of dollars have been spent attempting to implement this new thrust in education (Keller, 1972:10).

Worthington (1973:58) described the purpose of career education as follows:

> The main purpose of Career Education is to prepare all students for successful and rewarding lives by improving their basis for occupational choice, by facililating their acquisition of occupational skills, by enhancing their educational achievements, by making education more meaningful and relevant to their aspirations, and by increasing the real choices they have among the many different occupations and training avenues open to them.
>
> Career education embraces all occupations and professions and can include individuals of all ages whether in or out of school.

One professional organization which produced a position paper on career education was the National Association of State Directors of Vocational Education. This paper described the following characteristics as inherent and essential aspects of career education:

1. Career education is not synonymous with vocational education, but vocational education is a major part of career education.
2. Career education enhances rather than supplants public school educational programs.
3. Career education is an integral part of the total public education enterprise.
4. Career education involves all students and all educators.
5. Career education involves extensive orientation and exploration of occupational opportunities.
6. Career education emphasisizes individual instruction and student determination.
7. Career education is a continuum that begins at kindergarten and extends throughout employment.
8. Career education contributes to student incentive and aspirations.
9. Career education includes specific preparation for occupations.
10. Career education assures realistic occupational choices.
11. Career education promotes wholesome attitudes

> toward all useful work.
>
> 12. Career education permits each student to realistically assess personal attributes as a part of setting life goals.
> 13. Career education provides a means of articulation from grade to grade and level to level (Herr, 1974:5).

In October, 1974, the U.S. Commissioner of Education prepared a paper for the National Conference for State Coordinators of Career Education in which he stated in his concluding remarks:

> . . . career education is the most viable vehicle for needed educational reform for the entire system of American education that has come along in many, many years. It has been forged from local needs and been built with local expertise. It has a solid framework of research knowledge coupled with practical experience. Career education is a winner. It has my full and complete support (Bell, 1974:4).

During that same year the U.S.O.E. released a policy paper on career education. This paper, written by Hoyt, offered the following generic definition of career education:

> Career education is the totality of experiences through which one learns about and prepares to engage in work as part of her or his way of living (1974:5).

Based on the generic definition of career education and its rationale, Hoyt also indicated that the career education movement has embraced a number of basic conceptual assumptions. The following assumptions were delineated:

> 1. Since both one's career and one's education extend from the pre-school through the retirement years, career education must also span almost the entire life cycle.

> 2. The concept of productivity is central to the definition of work and so to the entire concept of career education.
>
> 3. Since "work" includes unpaid activities as well as paid employment, career education's concerns in addition to its prime emphasis on paid employment, extend to the work of the student as a learner, to the growing numbers of volunteer workers in our society, to the work of the fulltime homemaker, and to work activities in which one engages as part of leisure and/or recreational time.
>
> 4. The cosmopolitan nature of today's society demands that career education embrace a multiplicity of work values, rather than a single work ethic, as a means of helping each individual answer the question "Why should I work?"
>
> 5. Both one's career and one's education are best viewed in a developmental, rather than in a fragmented, sense.
>
> 6. Career education is for all persons—the young and the old; the mentally handicapped and the intellectually gifted; the poor and the wealthy; males and females; students in elementary schools and in the graduate colleges.
>
> 7. The societal objectives of career education are to help all individuals: a) want to work; b) acquire the skills necessary for work in these times; and c) engage in work that is satisfying to the individual and beneficial to society.
>
> 8. The individualistic goals of career education are to make work: a) possible, b) meaningful, and c) satisfying for each individual throughout his or her lifetime.
>
> 9. Protection of the individual's freedom to choose and assistance in making and implementing career decisions are of central concern to career education.
>
> 10. The expertise required for implementing career education is to be found in many parts of society and is not limited to those employed in formal education (1974:6-7).

Hoyt (1974:7) suggested that these ten concept assumptions do represent a total philosophical base for career education efforts. He was assertive, however, that although these assumptions are fundamental to an underlying philosophy, each could be debated.

The U.S. Chamber of Commerce summed up the concept of career education as follows:

> . . . career education is the total effort of education and the community to help all individuals become familiar with the values of a work oriented society, to integrate such values into their personal value systems, and to implement those values in their lives in such a way that work becomes possible, meaningful, and satisfying to each individual (1975:4).

Definitions of career education have been numerous as has the formulation of conceptual models. Many different approaches have been taken to the establishment of career education models and/or programs across the nation. Several of these were described by Stevenson; however he concluded with the following statement:

> . . . several existing models of career education have been presented none of which, in this writer's opinion, have captured the comprehensive notion which the Office of Education supports and espouses. On the basis of these models, the reader should begin developing an awareness of the reality that career education is on us, and that many persons, agencies, institutions, state and federal governments are heavily involved in thinking about, developing, planning for, and implementing career education, but have not developed a comprehensive career education model. Fourth, the reader should begin developing a sense of some of the voids in existing models and activities pertaining to career education; particularly, the void that is present in existing models as far as ongoing career development and career education needs for adults are concerned (1973:104-5).

Certain educators have voiced the opinion that career education programs should be developed at the local level to fit local needs. Schreiber and Black emphasized this idea in the following way:

Each program of career education must be unique in

> that it is planned and structured to meet the needs of the students in its community. This is true even when the broad goals of career education are planned at the state level. Within the framework of the state structure for career education each local education agency must plan a program to meet its own specific needs (1973:11).

According to these authors, career education needs should be determined by evaluation processes which assess the community situation as it presently exists. Much of this assessment data concerning drop out rate, number of high school graduates each year, and number of graduates accepting jobs in the field for which they were trained can be acquired from local school division files. Accordingly, valuable information can also be collected from other local organizations such as the State Employment Commission and the local Chamber of Commerce (Schreiber and Black 1973:11).

Schreiber and Black (1973:11) indicated that if a local program is to be successful, several diverse groups must have an understanding of career education and strong commitment to its concept. School administrators, teachers, parents, and business and industry representatives should be included in this group. A program coordinator is needed to provide leadership for the effort, according to these authors.

CAREER DEVELOPMENT CONCEPT

Our society expects, if not demands, people to make decisions concerning their life's work. The choosing of one's occupation (or occupations) is perhaps the most important decision that an individual is required to make during life. This choice will affect not only that individual, but society as well. The importance of decisions such as these has indicated to many educators that there is a need in the nation's schools for the improvement of career development or occupational planning where children are concerned.

Many educators feel there is a conflict between classroom studies and the work world. Keller discussed this idea at length when she wrote the following:

> . . . Thus we have seen the increasing urgency of the question: If work is a reality of our society, then should it not be an integral part of our total educational system? This question has brought to the forefront of educational conciousness the idea that career development is a responsibility of the total school and cannot be limited to a single discipline, department, or grade level. Career development is perceived as a continuous process from early childhood throughout life—developmental in nature. Thus all teachers—the elementary teacher, the secondary school counselor, the college professor—are accountable for career development (1972:3)

Many noted behaviorists have put forth theories on career development. Few of these writers have been found to be in total agreement on the subject. Furthermore, the various theories expounded were far too extensive for inclusion here. After explaining several of these theories in detail, Bugg summarized with the following statement:

An examination of career choice theories indicates

> a very definite place for a vocational development service in the elementary school. The theories of Ginzberg, Hoppock, and Super stress the developmental nature of career choice, and those of Holland and of Tiedeman and O'Hara imply it. Bordin and Roe indicate that the most important aspects of career development occur before the child enters school and are subject to very little change.
>
> In general, one must conclude from the above theories that two types of guidance services—(a) counseling for self-understanding and personal development, and (b) a well-formulated program of broad, general occupational information that serves as the foundation of later career decisions—are essential in the elementary school if schools are to render maximum assistance in making career choices to the nation's youth (1971:132-33).

Career development was described by Hohenshil with the following statement:

> . . . career development is seen as a longitudinal, developmental process which begins before a child enters formal education and extends throughout his life. To treat career choice (or more appropriately, career choices) as a one-shot event which occurs in the senior high school or post secondary institution is an oversimplification of this important aspect of human development (1975:315).

Career development is basic to career education efforts at all levels of learning. Elementary school children, even those at the fantasy stage, are in the process of formulating interests and values including those relating to career development. Havighurst (1953:2) pointed out that young children should explore different careers through activities related to their various developmental stages. He reemphasized this when he wrote, "Work is such an integral part of man's life that we can identify the stages through which an individual passes along the road to work" (1964:216). Table I, further illustrates Havighurst's view.

In addressing the subject of school responsibility, Wilhelms (1972) stressed the ideas that 1) occupational education should begin in kindergarten and 2) recognizing and attempting to compliment the developmental process with appropriate educational programs for youngsters is most important to career maturity. Wernick gave impetus to this when he wrote, "The child does not suddenly arrive on the scene as an adult ready to vote, ready to be employed, ready to be a parent" (1973:16).

The American Vocational Association (AVA) and the National Vocational Guidance Association (NVGA) published a "Position Paper On Career Development." This paper represented the attempt of these groups to bring together the basic beliefs and theories of many different writers on the concept of career development. The AVA and NVGA (1973:3-4) pointed out that career development was very much akin to human development:

> Certain basic principles regarding human development apply whether one speaks about physical, emotional, intellectual, social or career development. At least seven developmental dimensions are important in the design and implementation of programs for career development:
>
> 1. Development occurs during the lifetime of an individual. It can be described in maturational terms denoting progression through life stages and the mastery of developmental tasks at each stage. (Although research evidence is lacking, it seems unlikely that

TABLE I

Havighurst's Stages of Vocational Development

	Stages	Age
I.	Identifying with a Worker This is father, mother, and/or other significant persons. The concept of working becomes an essential part of the child's ego ideal.	5-10
II.	Acquiring the Basic Habits of Industry Child Learns to organize his time and energy to finish a work task such as school work or chores. He is learning to put work ahead of play in appropriate situations.	10-15
III.	Acquiring Identity as a Worker in the Occupational Structure The individual is choosing and preparing for an occupation. His work experience becomes a basis for occupational choice and for assurance of economic independence.	15-25
IV.	Becoming a Productive Person The Individual masters his occupational skills. He moves up the ladder within his occupation.	25-40
V.	Maintaining a Productive Society Emphasis shifts toward the societal and away from the individual aspect of the worker's role. The individual sees himself as a responsible citizen in a productive society. He attends to the civic responsibility attached to his job. He is at the peak of his occupational career and has time and energy to adorn it with a broader type of activity. He pays attention to inducting younger people into stages III and IV.	40-70
VI.	Contemplating a Productive and Responsible Life The person is retired from his work or in process of withdrawing from the worker's role. He looks back over his work life with satisfaction, sees that he has made his social contribution, and is pleased with it. While he may not have achieved all of his ambitions, he accepts his life and believes in himself as a productive person (Kimbrell and Vineyard, 1975:68).	70+

intervention can substantially shorten this maturation process.)

2. Individual development is influenced by both heredity and environment. Psychological, sociological, educational, political, economic and physical factors affect development. (Appropriate intervention strategies which focus upon these factors can influence the quality of individual development.)

3. Development is a continuous process. (Individual development can best be facilitated by intervention strategies that begin in the early years and continue throughout the life of the person. Programs which focus only at certain points or at certain stages in the individuals life will have limited effectiveness.)

4. Although development is continuous, certain aspects are dominant at various periods in the life span. (Programs designed to facilitate career development should account for the dominant aspects at given stages.)

5. Individual development involves a progressive differentiation and integration of the person's self and his perceived world. (Intervention strategies need to be designed to assist individuals during normal maturational stages of career development rather than to provide remedial assistance to individuals whose development has been damaged or retarded.)

6. While common developmental stages can be observed and described during childhood and adult life, individual differences in progressing through these stages can be expected. (Intervention programs should provide for these differences, making no assumption that something is "wrong" with those who progress at atypical rates.)

7. Excessive deprivation with respect to any single aspect of human development can retard optimal development in other areas. (Optimal human development programs are comprehensive in nature, not limited to any single facet. It is recognized that those who suffer from deprivation may require special and intensive assistance. Where deprivation is long term, short term intervention is not likely to be sufficient.)

One of the strategies for implementing career education programs recommended by Hoyt (1976:8) was as follows: "Organize career education efforts around the process of career development." He briefly discussed this recommendation in the following paragraph:

> Career development, as a part of human growth and development, covers the entire life span--from the preschool through the retirement years. Moreover, it encompasses all persons. Finally, it is based in a combination of philosophy and research that emphasizes freedom of choice for the individual. It is the most logical of all possible ways of viewing the total spectrum of education/work relationships (1976:8).

The development of a positive self concept and the formulation of attitudes, values and interests have been given considerable attention in the literature of recent years. Career development, like physical development, intellectual development and social development, has been described as a necessary part of the entire human development process. As a part of human development, it is considered by many educators to be a worthwhile and desperately needed area of focus for teachers and curriculum specialists.

RESEARCH STUDIES

Several research studies have been done in recent years on the topic of career education. The most recent of these was done by Sisca (1976). Her study was concerned with the effect of a career education program on the career awareness of Mexican-American children in upper elementary grades of certain selected schools in Los Angeles, California. Sisca also sought to determine teacher opinions about career education and the materials used with the experimental groups. In this study, four schools of the Los Angeles City Unified School District were used. Ten classes in two of the schools made up the control group and ten classes of the other two schools made up the experimental group. Participants in the schools totaled 20 teachers and 553 students. Treatment for the experimental group consisted of the utilization of special unit guides developed for career education by the Utah State Department of Education. Sisca used seven subtests of the Career Awareness Inventory to test students for gains in career awareness. The Career Education and World of Work Questionnaire was used to determine teacher opinions about 1) career education and 2) the Utah materials. It was found that the career education efforts of teachers using the Utah materials did not significantly increase career awareness of the Mexican-American children participating in the program. Teachers' opinions concerning the career education materials used were said to be favorable although the teachers questioned the extent of commitment which public education should make to the emphasis of career awareness.

The effects of a career oriented curriculum upon career awareness and career role identification of third, fourth, and fifth grade students of the Greeley (Colorado) Public Schools were studied by Parks (1974). Three experimental intact classes and three controlled intact classes for a total of 204 elementary students were used in the study. The researcher utilized a posttest, and a control group design. It was concluded from this study, that the treatment was generally effective in improving the career awareness of fifth and sixth grade students, but was not effective with third grade students. Parks also concluded that males know more about careers than females. A significant finding of this study was that attitudes about male and female career roles can be changed by utilizing a career education approach to teaching. The study emphasized that grade level appeared to be an important factor in the change of attitude, inasmuch as older youngsters seemed to benefit most from the career education curriculum.

Feit (1973) attempted to determine the effects of career education on academic achievement and career development in two elementary schools of Monongalia County, West Virginia. No experimental treatment was necessary for this study because the local career education program had been in operation for three years. A matched sample of forty students, twenty from each of two elementary schools, was used. Fourth and fifth grade students made up the groups studied. The researcher utilized the Career Maturity Inventory and the Metropolitan Achievement Test as instruments for the study. Statistically significant results were not found in career development nor in academic achievement.

Prince George's County, Maryland, was the site of a career education evaluation study by Bowen (1973). Bowen's purpose for the study was to determine the extent of difference between a sixth grade control group and an experimental group which had experienced a twenty week career education program. The study also sought to determine the extent of difference between the sexes in retention of career information and the extent of change in interest patterns between the experimental and control groups. He found that the experimental group scored significantly higher on the Career Information Survey and that girls in the experimental group scored higher than the boys in that same group. It was also concluded that the experimental group had significantly different scores in the area of interest patterns as measured by the Kuder Form E—General Interest Survey.

SUMMARY

The career education concept has enjoyed widespread acceptance in the United States. Many national organizations and prominent individuals have applauded and endorsed it. The United States Office of Education has promoted the career education concept, and many state and local school systems have attempted to implement locally financed programs.

The literature indicates that career education has moved from a unit approach toward a theme of career development, thus encouraging child-centered programs enhancing the self-concept and striving for the clarification of work values and interests. There is a trend toward integrating and infusing career education with the regular subject matter in the elementary and middle school grades. This represents a change from earlier years when career education programs were often developed on a supplementary unit basis.

The research studies discussed in this chapter were inconclusive relative to the contribution of career education to a student's career development and/or academic achievement. The literature cites certain difficulties in judging whether or not such insignificant differences as were found, are the result of the sophistication of the program, teachers' interest, emphasis given the concept by administrators, or other factors. It must be concluded, therefore, that program improvement and additional research should be continued if career education is to have a real impact on the career development and academic achievement of students.

Chapter 3

METHODS AND PROCEDURES

This study was undertaken in an effort to ascertain the effect of a locally developed career orientation program on student career development and academic achievement in grades five, six and seven of two Danville, Virginia, middle schools.

THE DESIGN OF THE STUDY

For the purposes of the study the students of Danville's Gibson and Taylor Middle Schools composed a heterogeneous population with three distinct strata. These strata were described as the fifth, sixth and seventh grade levels.

A quasi-experimental, pretest-posttest control group design, most similar to Campbell and Stanley's "Design 10" (1963:217-20) was used for the study. This design was diagramed by the authors as follows (1963:217):

$$\frac{0}{0}\;\text{— —}X\text{— —}\;\frac{0}{0}$$

In the above diagram X represents the treatment, or in this study the locally developed and infused career orientation program, and the 0's represent the administration of tests (both pre and post) for the respective comparison groups which are separated by the dashed line. The dashed line indicates the possibility that the two groups were not equivalent at the beginning of the treatment.

It was necessary to choose a quasi-experimental design because of difficulties encountered with school principals in the determination of comparison groups. Students had already been scheduled for certain classes when the study was undertaken by the researcher. Therefore, control groups for each of the three grade levels were established by the random selection of one prescheduled class prior to the opening of school for each grade level in each of the two middle schools. These two classes, one from each school, were then combined to form a control group for each grade level. By this method three control groups were determined by the size of the prescheduled classes which were selected. In Table II it can be noted that from totals of 346 fifth grade pupils, 370 sixth grade pupils and 386 seventh grade pupils, control groups of 43, 49 and 48 students, respectively, were established. Experimental groups of fifty students for each of the three grade levels were randomly selected from the remaining students. Peatman and Schafer's (1942:286-87) table of random numbers was used in the selection process.

During the period of the study a few subjects were lost from the comparison groups. However, as will be dis-

TABLE II

The Comparison Groups

Grade Level	Enrollment Totals	Control Group	Experimental Group
5	346	43	50
6	370	49	50
7	386	48	50

cussed later in this chapter, the mortality experienced did not seem to adversely affect the equality of the comparison groups nor the internal validity of the study.

CONTROLS FOR THE STUDY

Several control factors helped to strengthen the internal and external validity of the design for this study. A major weakness in the design is indicated in the way the control groups were selected. Since the control groups could not be selected from the grade level populations by utilizing pure random selection techniques, there was a question concerning their equivalency to the experimental groups. Nevertheless, control was achieved to a major extent by the class assignment practices of school principals. All classes of the Danville middle schools were purposefully made as heterogenous as possible by the principals with respect to ability, race and sex. Therefore, it was assumed by the researcher that the selection procedure was "random in effect" and that the comparison groups were equal. Support for this assumption will be presented later in this chapter.

Of the eight sources of invalidity identified by Campbell and Stanley (1963:217-20) three were indicated as possible sources of internal invalidity for this design. These were statistical regression, selection maturation interaction and mortality.

Statistical regression could not be controlled completely by the utilization of a random selection technique when determining the control groups. Partial control was gained because classes which made up the control groups were randomly selected from all the prescheduled classes of their respective grade levels and not on the basis of scores on any measures. Also, no matching was done between comparison groups. According to Campbell and Stanley (1963:219), matching would have insured the occurrence of unwanted regression effects.

Selection-maturation interaction was partially controlled, and the internal validity of the design improved in terms of this extraneous variable. The control factor present was the intentional heterogeneous composition of all the fifth, sixth and seventh grade classes from which control group classes were selected. For example, the evaluation committee reasoned that all the fifth grade classes of Taylor Middle School would be very similar to the other fifth grade classes in the two schools, and that any one of the classes selected at random would be representative of the fifth grade population to be studied. This reasoning was a basis for the evaluation committee's opinion that the comparison groups of the study were equal in their group rates of maturation. It was felt that this control was as strong as could be expected for the quasi-experimental design chosen for this study.

Mortality is a factor which commonly jeopardizes the internal validity of pretest-posttest designs. This threat to internal validity was controlled to a major extent because students in the fifth, sixth and seventh grades are prevented from quitting school because of age. It was anticipated that a few students would be lost prior to the posttest. Nevertheless, it was the feeling of the evaluation committee that the mortality experienced would be equivalent for both the control and experimental groups and that the study would suffer little bias as a result. An inspection of the lost cases indicated that the subjects had left the comparison groups because of families leaving the city and not because of the treatment. The lost cases and their effect on the data analysis will be discussed later in this chapter.

The external validity threats related to "Design 10" and described by Campbell and Stanley (1963:220) were as follow: 1) interaction of testing and treatment, 2) interaction of selection and treatment and 3) reactive arrangements. These factors of external invalidity were thought to be very real threats to the generalizability of this study; however, certain controls were present which are discussed below.

The threat of the pretest to external validity is a problem relating to interaction effects of testing and treatment. Although this design did include a pretest, this threat to external validity was controlled, at least partially, through the time interval involved between the pretest and the posttest. The reader will note from Figure 1, (page 57) that the pretest was administered in September of the 1976-77 school year and that the treatment continued for more than seven months before the posttest was administered. Although the pretest could have caused changes in the comparison group participants, these changes were probably negated during the time of the treatment and prior to the posttest. Another factor representing control of the effect of the pretest on the treatment was the instrumentation utilized. The pretest was conducted using standardized instruments which will be discussed later in this chapter. The participants had experienced tests of this type during previous school years. Therefore, it was thought that no undersirable interaction of testing and treatment would be present (Campbell and Stanley:188).

Interaction of selection and treatment, as described by Campbell and Stanley (1963:186-192), was seen as a threat to the external validity of the design and thus, to the generalizability of this study. Because another study on value clarification was being conducted in two of the school division's four middle schools, the remaining two schools were selected for this study. When the principals of the schools used in this study were contacted they were very enthusiatic about the evaluation, and their faculties proved to be very cooperative. Nevertheless, this factor of invalidity could have been controlled to a larger degree had the researcher been able to randomly select schools to participate in the evaluation study from all four of Danville's middle schools. It was believed by the evaluation committee, however, that the students and faculties of the two schools participating in the study were representative of the total fifth, sixth and seventh grade populations of the city.

The last extraneous variable of concern to this study was that of reactive arrangements. According to Campbell and Stanley (1963:190), "a most prominent source of unrepresentativeness is the patent artificiality of the experimental setting and the student's knowledge that he is participating in an experiment." This study controlled for reactive arrangements by 1) not informing students of the evaluation, 2) integrating the treatment into the regular curriculum, and 3) implementing the career orientation program in all classes of the fifth, sixth and seventh grades with the exception of those of the control groups. Teachers were, however, aware of the evaluation. The overemphasis of career orientation was controlled by assessing the effect of the treatment on academic achievement as a major part of the evaluation. It was reasoned that teachers would be cautious in overemphasizing career orientation at the expense of a decline in academic achievement. Also, the experimental group students were so scattered among all the classes of the different grade levels that teachers normally had only three or four youngsters in their classes who were participants in the study.

There is also a strong possibility that students enrolled in the control group classes became aware of the new teaching strategies and techniques being used by teachers other than their own, and took note of differences in methodology among groups. This situation could possibly have produced a reactive arrangements effect. If there was an effect, however, it was felt to be relatively insignificant because students, throughout their school years, typically are exposed to a variety of teaching methods and subject content. They are, in essence, conditioned for variation among teachers and not likely to overreact when differences in methodology occur. As will be discussed later in this chapter, the researcher controlled for the reactive arrangements effect, to a large extent, by monitoring the treatment without the necessity of having meetings of teachers, classroom observations or having principals emphasize and monitor the career orientation program. Overall, it was felt that the reactive arrangements effect was controlled very well for a field study of this type.

COLLECTION OF DATA

The researcher considered several instruments for gathering the data. The Career Maturity Inventory (CMI) developed by Crites and published by CTB/McGraw Hill (formerly California Test Bureau) was considered to be most appropriate for the career development aspect of this study. The first data were collected for this instrument in 1961. The CMI was formerly entitled the Vocational Development Inventory (Kerr, 1974:54). The CMI consists of the *Attitude Scale* and the *Competence Test*.

Crites (1973:30-5) pointed to more than a decade of research on the *Attitude Scale* as evidence supporting its high degree of reliability and validity. The author further emphasized his belief in the reliability and validity of the CMI when he made the following assertion:

> Research findings that have been accumulating on the CMI for more than a decade, dating back to the first administration of the *Attitude Scale* in 1961-1962, indicate that it is a reliable and valid measure of career maturity (Crites, 1973:4).

More specifically, the Kuder-Richardson Formula 20 was used in an attempt to calculate the internal consistency of the *Attitude Scale*. The mean reliability calculated for grades 6-12 was .74 for this section of the CMI. According to Crites this mean coefficient indicated a desirable level of reliability due to the fact that the *Attitude Scale* was constructed to measure related items of vocational attitudes rather than identical clusters (1973:14).

Crites (1973:14-21) discussed the various techniques that have been used to determine indications of the content, criterion-related and construct validity of the *Attitude Scale*. In describing the research done on content validity, he made the following statement:

> . . . the content of items written for the *Attitude Scale* was explicitly deduced from central concepts in career development theory, conceptual or "literary" definitions (Underwood, 1957; Table I), and then gathered from relevant instances of verbal vocational behavior. From a pool of approximately 1,000 items, 100 were selected according to Flanagan's (1951) procedure for the initial standardization. This constitutes presumptive substantive evidence, therefore, that the *Attitude Scale* samples content that is theoretically relevant and representative (1973:15).

According to Crites (1973:15): "There is also empirical evidence which supports much the same conclusion." This evidence was described as follows:

> In a study of the agreement between the empirical scoring key for the *Attitude Scale* and a rationally derived one, Hall (1962) asked ten expert judges (five male and five female counseling psychologists) to indicate which they considered to be the more mature response to each attitude item. The criterion of interjudge agreement used was agreement between eight out of ten judges, or 80 per cent. To determine agreement between the two keys, he simply calculated the number of times the empirical and rational endorsements were the same. Of the fifty items in the *Attitude Scale* the judges agreed with the standardization sample thirty-seven times, including all of the seven items which were scored in the True position. In other words the percentage of agreement was 74 per cent (Crites, 1973:15).

Following up on this discussion, the author of the CMI indicated that the *Attitude Scale* would appear to have acceptable content validity as defined by the aforementioned methodology and as developed substantively (Crites, 1975: 15).

The criterion-related validity research on the *Attitude Scale* was described by Crites as follows:

> . . . The *Attitude Scale* has been related to several so-called criterion variables in a number of different studies. Bathory (1967) correlated it with the Occupational Aspiration Scale (Miller and Haller, 1964), which is a measure of realism of aspiration. In groups of ninth (N=79) and twelth (N=58) graders, he obtained r's of .39 (p. < .01) and .31 n.s., respectively (1973:15).

In another study of the interrelationships of the *Attitude Scale* and consistency, decision and realism in career choice, Hallender (1964) found significant covariation of career attitude maturity with all of these criterion variables in a sample of 1,648 males and females in Grades 6 through 12, stratified by quartiles on scholastic aptitude (Crites, 1973:15-16). In the following statements, which are from this same treatise, Crites further discussed the criterion-related validity of the *Attitude Scale*.

> . . . Multiple t tests between high and low groups within each grade established that students making more realistic career choices generally score higher on the *Attitude Scale*, irrespective of aptitude level. Similarly, Carek (1965) studied the relationship of decisiveness in career choice to the *Attitude Scale* in a group of 346 male college students and has reported a biserial r of .25 between CMI total score and being decided about career (Crites, 1973:16).

The developer of the CMI described the criterion-related validity research on his *Attitude Scale* even further, by citing the work of Cooter and Wilstach as follows:

> . . . Some preliminary data have also been collected on the *Attitude Scale* in relation to the other measures of career maturity. For example, Cooter (1966) found an r of .38 ($p < .01$) between career attitude maturity and Gribbons and Lohnes' *Readiness for Vocational Planning* (RVP) scales. However Wilstach (1967) reported nonsignificant r's between the *Attitude Scale* and Super's *Indices of Vocational Maturity* (IVM) (Crites, 1973:16).

In summary, Crites indicated that the N's for many of the studies done on criterion-related validity are too small and hence their findings should be replicated, but he emphasized that they "generally indicate that the *Attitude Scale* has demonstrated criterion related validity" (1973:16).

The construct validity of the *Attitude Scale* was discussed at length by Crites (1973:16-21). This discussion was considered much to lengthy to be summarized here. However, his own summary statement on the subject was as follows:

> Taken in toto, the accumulated research on the *Attitude Scale* supports its construct validity: in general, it appears to be related to variables to which, theoretically, it should be related and unrelated to variables to which it should not be related (Crites, 1973:21).

The *Competence Test*, or second section of the CMI, is made up of the following five subtests: 1) "Knowing Yourself" (Self Appraisal), 2) "Knowing About Jobs" (Occupational Information), 3) "Choosing a Job" (Goal

Selection), 4) "Looking Ahead" (Planning), and 5) "What Should They Do?" (Problem Solving). In discussing the reliability of the test Crites stated that "... all five parts of the *Competence Test* are relatively homogeneous sets of items and, therefore, it can be assumed that within a subtest the items measure essentially the same variable" (1973:33).

The reliability of the *Competence Test* is still being evaluated; however, internal consistency coefficients are presently available. Data on test-retest stabilities are being collected, but are not available at this time. Kuder-Richardson Formula 20 values were calculated for each grade level standardization sample (N's ranged from 120 to 475) to determine the homogeneity of items in the subtests. The author points to internal consistency coefficients which, with only two exceptions, range from .72 to .90. The two low coefficients were found to be for the "Problem Solving" subtest when administered to sixth and seventh grade students. The "Problem Solving" subtest was not used in this study. In general the Kuder-Richardson Forumla 20's indicated that the *Competence Test* is made up of a relatively homogeneous set of items within each subtest and that all the subtest items measure essentially the same variables (Crites, 1973:30-33).

Although much of the work on the validation of the *Competence Test* has just begun, there is some evidence to support its validity. Two types of content validity measures were used. The first was a rational approach where the content to be tested was put into the stem and answer form following Crites' model of career maturity. After empirical testing it was concluded that the questions "measure variables which change systematically between grades six and twelve according to generally accepted criteria of developmental curves" (Crites, 1973:33-4).

Criterion-related validity for the *Competence Test* was discussed at length by the author. The items selected for this test according to Crites, were monotonic functions of grade, and thus this type of validity must show percentage overlap in score distributions of the subtests from grade to grade. The results for all of the grades showed that the percentage of overlap ranged from 33 percent to 56 percent including subtest to subtest via grade. Therefore, Crites stated that "the relationships of the *Competence Test* to grade as a criterion of development are about what would be expected theoretically, given the monotonic model and individual differences in career maturity" (1973:34).

The construct validity of the *Competence Test* is based on that part which was designed to measure career choice competencies. The product moment correlations among the subtests were obtained with r's ranging from .25 to .73 with a mean of .54, which coincided with the approximate theoretical expectations of the test developer. Factor analysis on the *Competence Test* has not yet been performed; however, according to Crites if the data are cautiously interpreted, it appears to be consistent with the construct of career choice competencies which the *Competence Test* was devised to measure (Crites, 1973:34-5).

Two nationally sanctioned panels of experts reviewed 113 instruments for their potential use in testing career education objectives and the CMI was one of ten which were recommended. While these two panels of experts approved the CMI for use as a career education evaluation instrument, subtest five of the *Competence Test* was not recommended due to disagreement concerning the scoring of certain items (Young and Schuh, 1975:al-26).

The CMI, with the exception of the fifth subtest, was determined to be the best instrument for use in the evaluation of the career development facet of the Danville program. The fifth subtest, "What Should They Do?", seemed to be a test of the individual's ability to cope, and did not seem applicable to the Danville study. This opinion plus the determination of the two aforementioned panels caused the researcher to drop the fifth subtest of the *Competence Test* from consideration for use in the study.

Crites' test did appear to meet the other criteria pertinent to the selection of an instrument for use in evaluating the career development facet of the program. The test could be administered to groups of students. It required very little writing and it could be administered in a relatively short period of time (approximately two and one-half hours). The cost was acceptable and it was evidenced to be both reliable and valid.

Aside from the fifth subtest of the *Competence Test*, already discussed, the only major problem foreseen with the use of the CMI was the reading level. The test was found to require a reading level of at least sixth grade. For students reading at a level lower than this, oral administration was recommended. Therefore, the oral administration of the CMI, including the *Attitude Scale* and the four acceptable subtests of the *Competence Test*, was recommended by the researcher to the members of the evaluation committee. The recommendation was approved.

The evaluation committee was also asked to suggest an achievement test to be used to measure the academic achievement portion of the study. This committee unanimously recommended the *Blue Level* of Science Research Associates' (SRA) Achievement Series (ACH).

The ACH is a nationally normed test consisting of three separate overlapping levels. The *Blue Level*, *Green Level*, and *Red Level* are of graduated difficulty and are recommended for use in grades four through nine. The *Blue Level* is the least difficult of the three, but it was felt by the committee to be suitable for grades five, six and seven as far as the study was concerned.

The *Blue Level* of the ACH has been used throughout the Commonwealth of Virginia for several years as a part of the State testing program. The committee reasoned that the ACH was a highly respected instrument and that data accumulated from the study could be readily compared to previously collected data on Danville's students. The evaluation committee members also suggested that the findings of the study would be easily interpreted by local school personnel if the ACH, *Blue Level* was used.

The committee suggested also, that the *Blue Level* of the ACH showed evidence of being a highly reliable and valid instrument. The committee decided that the same form of the test could be used for both the pretest and the posttest since the testing was to be done in September and May of the 1976-77 school year.

The researcher sought to determine the reliability and validity of the aforementioned tests before adopting them for use in the study. Good information was found to be available on all of the ACH subtests.

SRA (1972:6) described the reliability of tests in the following way:

> A reliable test is consistent in its measurement of whatever it attempts to measure, and its scores are said to be dependable and stable. Most of the methods for estimating the reliability of a test result in a correlation coefficient that indicates the degree of reliability, with 0.00 (zero) indicating no reliability and 1.00 (one) indicating perfect reliability.

Kuder-Richardson Formula 20 correlation coefficients for the three subtests of the ACH *Blue Level* were found to be .89 for "Social Studies", .84 for "Mathematics Concepts" and .88 for "Science" (Science Research Associates, 1972:6). These "estimates of reliability" were thought to indicate that the test was worthy of dependence and merited confidence.

In an attempt to determine the validity of these three subtests the researcher noted the following statement:

> Achievement tests are most often judged on the basis of content validity. A test is said to have content validity when authorities agree that the questions adequately cover a proposed subject area, or domain of objectives. If a test is supposed to cover certain important outcomes of school, then the questions in the test should accurately measure objectives representative of those outcomes (Science Research Associates, 1972:5).

The content validity of the ACH was given much attention according to SRA:

> During the development of ACH, considerable attention was given to making the test content representative. In addition to considering current instructional and curricular materials, the reviews by teachers and curriculum specialists were heavily weighed. The materials and reviews by curriculum specialists were counted on for answering the question "What should be tested?" The teachers, by writing items and by reviewing the tests, helped answer the question "What is taught?" And the students themselves, during the pretesting of items and the norming of the tests, helped answer the question "What is learned?" Each question in ACH was selected on the basis that it should be taught, that it is taught, and that it is learned (1972:5).

The developers of the ACH indicate the manner in which content validity was established and conclude as follows:

> ... In the final analysis the question of content validity rests with you, the test user. ACH was constructed to measure commonly accepted outcomes for schools throughout the country. By comparing your expected outcomes with those measured by ACH, you can decide whether or not the ACH tests meet your needs (Science Research Associates, 1972:5).

The various tests which were discussed in this section were felt to be suitable for collecting data relative to the eight hypotheses stated in Chapter 1. More specifically, the *Attitude Scale* of the CMI was used to collect data relative to the first hypothesis and the four subtests of the CMI *Competence Test*; 1) "Knowing Yourself", 2) "Knowing About Jobs", 3) "Choosing a Job" and 4) "Looking Ahead" were used to collect the respective data relative to hypotheses two through five. Three subtests of the ACH, *Blue Level*; 1) "Social Studies", 2) "Mathematics Concepts", and "Science" were used to collect data relative to hypotheses six, seven and eight, respectively.

The CMI and the ACH are protected by copyright and could not be included in the appendix. However, they may be secured from CTB/McGraw Hill, Delmonte Research Park, Monterey, California 93940 and Science Research Associates, Inc., 57 West Grand Avenue, Chicago Illinois 60611, respectively.

THE TESTING PROCEDURES

It was necessary to implement several controls during the test administration. The following techniques were instituted during both the pretest and the posttest:

1. The researcher, in cooperation with the two school principals, designated the school libraries and cafeterias as the places where tests would be administered.

2. Libraries were closed and lunch schedules adjusted during the days of test administration to insure against interruptions.

3. During the test administration at least two school staff members were present at all times to assist the tester and to monitor.

4. Adequate seating and proper distance between students taking tests were maintained.

5. Ventilation, temperature and lighting were controlled at all times during the test administration.

In addition to the aforementioned controls, all tests were administered by a single tester (school psychologist), who was both well trained and unbiased toward the study. This same researcher administered both the pretests and posttest to the control and experimental group students of all three grade levels. As will be noted from Figure 1 (page 57), the pretesting and posttesting was conducted in late September of 1976, and early

May of 1977, respectively.

THE TREATMENT

The career orientation program which was developed for the middle school students of Danville was in essence, a methodology of simultaneously relating the work world to the social studies curriculum and to the mathematics-science-health curriculum. Essentially the treatment consisted of the teachers using the career orientation suggestions included in the newly developed guides to teach their regular subject matter.

The suggested methods, teaching strategies, techniques, media and aids were numerous. They have, however, been condensed into the twenty-one generally stated strategies or techniques which follow:

1. Incorporate the study and discussion of different life-styles as they relate to occupations.

2. Integrate academic instruction with the teaching of the free enterprise system and consumerism.

3. Utilize career games and role playing in "What's My Line?" type classroom activities.

4. Assign research projects on job opportunities in the community by having the students utilize the newspaper "want ads," write the various busineses and industrial concerns of the community for information and/or interview a representative of the Virginia Employment Commission.

5. Have students keep charts on stocks from the newspaper stock reports while studying occupations in this field and/or the free enterprise system.

6. Provide opportunities for students to design, produce and display bulletin boards which show relationships between the subject matter being studied and occupations.

7. Encourage students to begin narrowing their occupational choices by conducting class discussions of the various career clusters.

8. Stress job satisfaction rather than economic success as being important to career choices.

9. Emphasize the need for people to know themselves in terms of abilities, interests, aspirations and attitudes when making career choices.

10. Utilize the career orientation filmstrips, tapes and other media available in the school library to supplement instruction.

11. Invite workers in the community to speak to the class concerning their occupations and careers for the purpose of providing career models.

12. Plan and facilitate trips to business and industrial work sites in the community to reinforce the relevance of subject-matter to occupations.

13. Offer students "try out" or "hands on" experiences as a part of the classroom instruction to facilitate

their own selection of the various types of work which they enjoy most.

14. Provide or suggest individual student projects which will, as a result, cause students to become more knowledgeable about various occupations.

15. Involve the students with the work of a typical civic organization by undertaking community projects.

16. Promote class discussions of career interests as they relate to possible occupations.

17. Design lesson plans which relate the regular subject matter to examples of practical use in earning a living.

18. Assign research projects on the many services available in the community and the occupations related to those services.

19. Emphasize the obvious necessity and value of all jobs.

20. Encourage students to develop a positive work ethic by emphasizing the development of a personal philosophy toward work.

21. Demonstrate by examples the fact that rapid changes in job technology and labor market demands require academic proficiency on the part of workers.

TREATMENT MONITORING

In an effort to have all teachers understand the evaluation study completely, the writer conducted two meetings with the faculties of the two schools participating. The first meeting was held during the pre-school conference days and the second was held at the beginning of the second nine week grading period. During these meetings the evaluation study was explained thoroughly and the need for strict adherance to the control specifications was stressed. The researcher pointed out that control group teachers would have two preparations each day. Teachers were reminded also that conscious effort would be needed to avoid using the same or similar methods, teaching strategies, techniques, media and aids which were recommended in the rewritten social studies curriculum guide and in the new career orientation guides for mathematics, science and health. Teachers appeared to accept this rationale and the school principals seemed enthusiastic about the evaluation of the program.

The researcher purposefully refrained from monitoring the treatment too closely in an effort to control for the reactive arrangements effect (Campbell and Stanley, 1963:190) or what is more commonly known as the "Hawthorne effect." The technique used to monitor the program was developed by the researcher, with the approval of the evaluation committee. The researcher used the twenty-one generally stated strategies, discussed earlier to develop a monitoring report (Appendix A) which was completed by teachers. The treatment period timing is shown in Figure 1. Note that this monitoring report was completed at the end of each nine week segment of the treatment period.

The researcher anticipated that these "self monitoring" type reports would be adequate to:

1. Provide sufficient information on the degree to which the program was being implemented.

2. Lessen the chances of a reactive arrangements effect.

3. Permit a later analysis of the various kinds of teaching strategies, etc. which might have had the greater, or lesser, effect on career development and/or academic achievement.

4. Provide indications as to where program improvements were needed.

Following the previously mentioned meeting with teachers at the beginning of the second nine week treatment period, the researcher visited in the middle school classrooms only when invited by teachers to do so. No efforts were made to encourage teachers to overemphasize the career orientation program or treatment; however, teachers and principals were given assistance whenever it

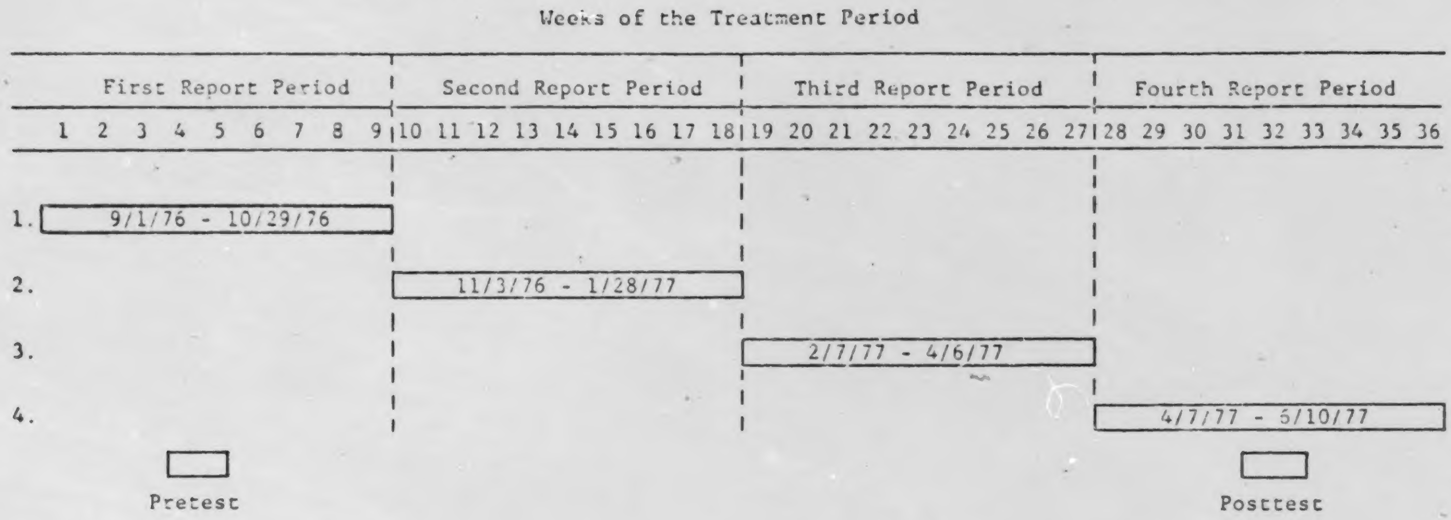
Weeks of the Treatment Period
First Report Period
Second Report Period
Third Report Period
Fourth Report Period
1 2 3 4 5 6 7 8 9
10 11 12 13 14 15 16 17 18
19 20 21 22 23 24 25 26 27
28 29 30 31 32 33 34 35 36
1.
9/1/76 - 10/29/76
2.
11/3/76 - 1/28/77
3.
2/7/77 - 4/6/77
4.
4/7/77 - 6/10/77
Pretest
Posttest

Figure 1

Time Line of the Treatment, Monitoring and Testing Procedures for the 1976-77 School Year was requested.

The monitoring reports submitted by teachers at the end of each nine-week treatment period indicated that the students of the fifth, sixth and seventh grade experimental groups were exposed to a greater number of the career orientation strategies or techniques, on the average, than were the students of the control groups. As the reader will note from the monitoring report tallies, (Appendices B-D) about half of the strategies or techniques were implemented with the experimental group students to a much greater extent than with the controlled students. The reports of the control group teachers revealed, however, that the controlled students had also been exposed, but to a very limited degree. In most situations the minimal control group exposure was thought to have resulted from the normal and [illegible]egular activities of the classroom. These activities when broadly interpreted, were classified by teachers as career orientation strategies which they had been using for sometime without realizing it.

Overall, students of the three experimental groups were exposed to certain of the recommended program strategies or techniques to a much greater degree than were the controlled students. The strategies which were not implemented to any great extent were, for the most part, the type activities which are more time consuming and/or tend to require some type of special arrangements by the teacher. While in most cases the teachers of the experimental students exposed their classes to more of the lesser used strategies or techniques than did the control group teachers, this exposure was not nearly as extensive as was anticipated and planned in the career orientation guides.

THE COMPARISON GROUPS

During the treatment period twelve subjects were lost from the comparison groups. It is noted in Table III that mortality was experienced in each of the three control groups and in one of the experimental groups. Four subjects were lost from the fifth grade control group, one from the sixth grade control group, four from the seventh grade control group and three from the seventh grade experimental group.

Despite the mortality experienced the equality of comparison groups was defended through 1) an inspection of the scores of the lost subjects and 2) tests of the difference between the pretest data of those subjects who were available for both the pretest and the posttest. The inspection of the pretest data for the lost subjects disclosed that their scores were very evenly spread throughout the respective score distributions. It appeared from this inspection of the data that the lost cases would have little influence on the comparability

TABLE III

The Mortality Experienced

Grade Level	Control Group Pretest N	Control Group Posttest N	Control Group Loss	Experimental Group Pretest N	Experimental Group Posttest N	Experimental Group Loss
5	43	39	4	50	50	0
6	49	48	1	50	50	0
7	48	44	4	50	47	3

of the control and experimental groups. A further analysis was done utilizing the social studies, mathematics and science scores of the ACH portion of the pretest, which were thought to be useful as indicators of group comparability. The researcher analyzed the aforementioned pretest data of the students who were available for both the pretest and the posttest in an effort to determine any differences which might have existed between the comparison groups as a result of mortality. From this analysis the researcher found evidence which indicated an equality between the comparison groups, and therefore supporting the internal validity of the study.

It is noted in Table IV that the differences between the data of the comparison groups on the three academic tests, as indicated by a t test, were not significant (two-tailed test $p. < .05$). An F-test ($p. < .05$) on these data also indicated, with only one exception, that there was no significant difference in the variability of control and experimental group scores. The exception was for fifth grade mathematics concepts, which the reader will note was slightly significant ($1.85 > 1.83$). Hence, support is offered for the comparability of the control and experimental groups.

Initially the researcher had planned to employ analysis of covariance to statistically adjust and compensate for pretest score differences between the comparison

TABLE IV

Comparability of the Control and Experimental Groups After Subjects were Lost

Tests	Grade Levels	Control Groups			Experimental Groups			Computed t	Computed F
		N	Mean	Standard Deviation	N	Mean	Standard Deviation		
Social Studies	5	39	18.41	7.10	50	20.58	8.33	-1.2856	1.38
Mathematics Concepts	5	39	17.10	5.70	50	19.76	7.76	-1.7733	1.85
Science	5	39	17.49	5.67	50	18.60	6.74	-0.8189	1.41
Social Studies	6	48	23.42	6.77	50	23.92	7.30	-0.3500	1.16
Mathematics Concepts	6	48	22.50	7.59	50	22.86	7.57	-0.2325	1.01
Science	6	48	21.98	7.15	50	21.56	6.72	.2960	1.13
Social Studies	7	44	23.11	8.09	47	24.21	6.79	.6958	1.42
Mathematics Concepts	7	44	23.25	7.99	47	24.45	7.64	-0.7220	1.09
Science	7	44	21.66	8.26	47	22.28	6.76	-0.3871	1.49

Critical values of *t* = 1.9880 for the 5th grade
(two-tailed) 1.9850 for the 6th grade
1.9870 for the 7th grade

Critical values of F = 1.83 for the 5th grade
1.77 for the 6th grade
1.82 for the 7th grade

groups if needed. However, since control and experimental group scores were not found to be significantly different and since the selection procedure used was "random in effect," the researcher decided to abandon this plan and use a simpler technique for analysis of the data. This decision was justified on the basis of a U.S.O.E. report (1975:56) which indicated:

> If there is no difference between the groups on the pretest, analysis of covariance is not needed. In this case a simple $\underline{t}$ test for independent groups is appropriate for testing the posttest difference ...

Consequently, a $\underline{t}$ test for two independent groups was used to test the posttest differences in scores between the control and experimental groups. Ultimately, any differences found were used to test the hypotheses which were stated in Chapter 1. The results of the study were based upon this statistical analysis and are reported in Chapter 4.

SUMMARY

The study was based upon a pretest-posttest control group quasi-experimental design. This design was chosen primarily because of difficulties encountered in determining control groups. One of the weaknesses of this study was attributed to problems in using random selection procedures to establish the control groups. However, the selection procedure was evidenced to be "random in effect" and the control and experimental groups were assumed to be equal. Six other possible sources of invalidity and their controls were discussed. These were 1) statistical regression 2) selection maturation interaction 3) mortality 4) interaction of testing and treatment, 5) interaction of selection and treatment and 6) reactive arrangements.

The instruments which were used for gathering the data were the Career Maturity Inventory (CMI) and the *Blue Level* of SRA's Achievement Series (ACH). The CMI was designed to have two distinct sections: the *Attitude Scale* and the *Competence Test*, which consists of five subtests. Both instruments were considered to be reliable and valid. The local evaluation committee which helped determine the design of the study approved their use prior to the beginning of the 1976-77 school year.

All the tests were administered under well controlled conditions. Both the pretest and the posttest were administered by a single tester (school psychologist) who was well trained and unbiased.

The treatment, or career orientation program, included suggested ways of simultaneously relating the work world to the social studies curriculum and to the mathematics-science-health curriculum. Essentially the treatment consisted of teachers using the suggestions found in the social studies and mathematics-science-health guides which were condensed into twenty-one generally stated strategies or techniques.

The aforementioned twenty-one strategies served as the basis for development of the instrument used in the treatment monitoring process. Teachers completed the monitoring report at the end of each nine week treatment period. Thus, the instrument provided the teachers with a "self monitoring" type procedure and eliminated the need for the researcher to meet regularly with teachers or to observe and closely monitor the instruction. This technique helped the researcher ascertain the degree of program implementation and also helped control for the reactive arrangements effect.

Following the dropping of scores for lost cases the pretest data were analyzed in an effort to support the assumption of equality between comparison groups, which might have been affected by the mortality experienced. A $\underline{t}$ test showed that the pretest control and experimental group data were not significantly different when the scores of lost subjects were dropped.

The data for this study were ultimately analyzed by use of a $\underline{t}$ test for two independent groups. The posttest differences between the control and experimental groups were used to test the hypotheses which were stated in Chapter 1.

Chapter 4

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

The results of the study are based on an analysis of the data for the control and experimental groups of the three grade levels. A $\underline{t}$ test for two independent groups was used to test the posttest differences in scores between each of the comparison groups. The two-tailed test ($p. < .05$) was used throughout the statistical analysis. Data for each of the three grade levels were tested with respect to the eight null hypotheses which were stated in Chapter 1.

CAREER CHOICE ATTITUDES

The first hypothesis stated that there would be no difference in the degree of change in the career choice attitudes of students participating in the program and those who did not. Data utilized to test this hypothesis were collected from the posttest administration of the CMI *Attitude Scale* to the fifth, sixth and seventh grade comparison groups.

The reader will note from Table V that no statistically significant difference was found between the control and experimental group data for any of the three grade levels. Therefore, null hypothesis number one was not rejected.

TABLE V

Posttest Differences Between Control and Experimental Groups on Career Choice Attitudes

Grade Level	Group	N	Mean	Standard Deviation	Critical Value of t	Computed t
5	0	39	25.39	7.13	±1.9880	-.2270
5	X	50	25.72	6.60		
6	0	48	28.63	5.94	±1.9850	-.0866
6	X	50	28.72	5.04		
7	0	44	30.50	5.70	±1.9870	.3890
7	X	47	30.04	5.39		

0 - Control Group
X - Experimental Group

SELF-APPRAISAL RELATIVE TO CAREERS

The second hypothesis stated that there would be no difference in the degree of change in career self-appraisal between students participating in the program and those who did not. Data used to test this hypothesis was collected by the posttest administration of "Knowing Yourself," the first subtest of the CMI *Competence Test.* This subtest was administered to the fifth, sixth and seventh grade comparison groups.

After applying the t test for two independent groups it was determined as will be noted from Table VI, that there was no statistically significant difference between the control and experimental groups posttest data for the fifth, sixth and seventh grade levels. Therefore, null hypothesis number two was not rejected.

KNOWLEDGE OF OCCUPATIONS

The third hypothesis stated that there would be no difference in the degree of change in knowledge of occupations between students participating in the program and those who did not. "Knowing About Jobs," the second subtest of the CMI *Competence Test*, was used to collect the posttest data needed to test the hypothesis. This subtest was administered to all of the three grade level comparison groups.

TABLE VI

Posttest Differences Between Control and Experimental Groups on Self-Appraisal Relative to Careers

Grade Level	Group	N	Mean	Standard Deviation	Critical Value of t	Computed t
5	0	39	7.21	3.46	±1.9880	-1.6349
5	X	50	8.42	3.42		
6	0	48	9.19	3.41	±1.9850	.6775
6	X	50	8.72	3.35		
7	0	44	9.30	3.71	±1.9870	-1.5732
7	X	47	10.49	3.44		

0 - Control Group
X - Experimental Group

Table VII reveals that there was no statistically significant difference between the control and experimental groups on knowledge of occupations. Therefore, hypothesis number three was not rejected.

JOB CHOOSING SKILLS RELATIVE TO CAPABILITIES

The fourth null hypothesis stated that there would be no difference in the degree of change in job choosing skills relative to capabilities between students participating in the program and those who did not. The third subtest of the CMI *Competence Test*, "Choosing a Job," was used to collect the posttest data to test this hypothesis. This subtest was administered to the comparison groups of the fifth, sixth and seventh grades.

Table VIII indicates the determination that there was no statistically significant difference between the control and experimental groups in degree of change in job choosing skills. Therefore, hypothesis number four was not rejected.

PLANNING SKILLS RELATIVE TO GOALS

The fifth hypothesis stated that there would be no difference in the degree of change in planning skills relative to goals between students participating in the program and those who did not. Data required to test this hypothesis was collected from the posttest administration

TABLE VII

Posttest Differences Between Control and Experimental Groups on Knowledge of Occupations

Grade Level	Group	N	Mean	Standard Deviation	Critical Value of _t_	Computed _t_
5	0	39	8.95	3.39	±1.9880	-1.5591
5	X	50	10.08	3.33		
6	0	48	10.38	3.95	±1.9850	-0.8167
6	X	50	10.98	3.29		
7	0	44	9.95	4.31	±1.9870	-1.2211
7	X	47	10.98	3.59		

0 - Control Group
X - Experimental Group

TABLE VIII

Posttest Differences Between Control and Experimental Groups on Job Choosing Skills Relative to Capabilities

Grade Level	Group	N	Mean	Standard Deviation	Critical Value of t	Computed t
5	0	39	7.36	2.90	±1.9880	-1.9833
5	X	50	8.70	3.30		
6	0	48	8.38	3.78	±1.9850	-1.8212
6	X	50	9.66	3.11		
7	0	44	8.75	3.11	±1.9870	.3018
7	X	47	8.53	3.67		

0 - Control Group
X - Experimental Group

of the fourth subtest of the CMI *Competence Test*, "Looking Ahead," to each of the three comparison groups.

The reader will note from Table IX that no statistically significant difference was found between the control and experimental group data for any of the three grade levels. As a result, null hypothesis five was not rejected.

SOCIAL STUDIES ACHIEVEMENT

The sixth hypothesis stated that there would be no difference in the degree of change in social studies achievement between students participating in the program and those who did not. The "Social Studies" subtest of the ACH *Blue Level* was used to collect the posttest data needed to test the sixth hypothesis. All three comparison groups, fifth, sixth and seventh grade levels, were administered this subtest.

Table X reveals that the data of the experimental groups were not significantly different, statistically, than that of the control groups. Therefore, the sixth hypothesis was not rejected.

MATHEMATICS ACHIEVEMENT

The seventh null hypothesis postulated that there would be no difference in the degree of change in mathematics achievement between the students participating in

TABLE IX

Posttest Differences Between Control and Experimental Groups on Planning Skills Relative to Goals

Grade Level	Group	N	Mean	Standard Deviation	Critical Value of *t*	Computed *t*
5	0	39	8.10	3.95	±1.9880	-1.094
5	X	50	9.04	3.97		
6	0	48	8.58	3.85	±1.9850	-0.8971
6	X	50	9.28	3.76		
7	0	44	8.98	3.83	±1.9870	-1.1799
7	X	47	9.94	3.83		

0 - Control Group
X - Experimental Group

TABLE X

Posttest Differences Between Control and Experimental Groups on Social Studies Achievement

Grade Level	Group	N	Mean	Standard Deviation	Critical Value of *t*	Computed *t*
5	0	39	19.85	8.43	±1.9880	-1.6869
5	X	50	22.94	8.53		
6	0	48	27.23	8.06	±1.9850	.6279
6	X	50	26.26	7.05		
7	0	44	26.61	7.56	±1.9870	.0676
7	X	47	26.51	6.80		

0 - Control Group
X - Experimental Group

the program and those who did not. Posttest data relative to this hypothesis were collected by administering the ACH *Blue Level* subtest, "Mathematics Concepts," to the control and experimental groups of the fifth, sixth and seventh grade levels.

The reader will note from Table XI that no statistically significant difference was found between the control and experimental group data for the three grade levels. Because of this finding, hypothesis number seven was not rejected.

SCIENCE ACHIEVEMENT

The eighth hypothesis stated that there would be no difference in the degree of change in science achievement between students participating in the program and those who did not. The ACH *Blue Level* subtest, "Science," was used to collect the posttest data for the comparison groups.

Table XII reveals that the t tests for two independent groups disclosed no statistically significant difference between the posttest data of the control and experimental groups for the fifth, sixth nor seventh grade levels. Therefore, null hypothesis number eight was not rejected.

TABLE XI

Posttest Differences Between Control and Experimental Groups on Mathematics Achievement

Grade Level	Group	N	Mean	Standard Deviation	Critical Value of t	Computed t
5	0	39	20.77	7.83	±1.9880	-.6584
5	X	50	21.90	8.04		
6	0	48	25.75	7.91	±1.9850	-.0579
6	X	50	25.66	7.32		
7	0	44	25.81	7.95	±1.9870	-.3062
7	X	47	26.32	7.49		

0 - Control Group
X - Experimental Group

TABLE XII

Posttest Differences Between Control and Experimental Groups on Science Achievement

Grade Level	Group	N	Mean	Standard Deviation	Critical Value of t	Computed t
5	0	39	19.13	7.29	±1.9880	-1.6102
5	X	50	21.72	7.57		
6	0	48	24.33	7.75	±1.9850	.5296
6	X	50	23.52	7.29		
7	0	44	24.50	7.96	±1.9870	.4922
7	X	47	23.72	6.91		

0 - Control Group
X - Experimental Group

DISCUSSION

The means for the fifth, sixth and seventh grade comparison groups as shown in the aforementioned tables were found to have improved with advancing grade level. This improvement in career development appeared to be correlated with maturity. The improvement of the means on academic achievement from one grade level to the other was expected because of the organized, sequential nature of instruction. A review of the t scores, and standard deviations does not indicate other discernable trends within the data.

Inasmuch as measurement in career education is still in its infancy it is possible that the instruments used to collect the data were not sensitive enough to accurately measure the differences which might have resulted from the treatment. Other selected instruments or methods of evaluation could have yielded somewhat different results. For example, it is possible that the assessment of impact of the career orientation program on the attitudes of parents, teachers or business and industrial representatives in the community might have yielded positive findings. Although this study yielded no statistically significant differences in either the career development or academic achievement of students, it is possible that the program had a positive impact.

Several other factors could have contributed to the lack of significant findings in this study. One factor in question is the attitude of teachers toward the implementation of the career orientation program. During the past decade there has been an increasing emphasis, both nationally and locally on improvement in academic achievement. Teachers may have construed the career orientation program as an intrusion into their main teaching responsibility and as a consequence sought to implement only those strategies or techniques which could be accomplished most easily. It is plausible also that teachers could have been confused concerning the program. It may be that they did not understand or agree with the recommendations included in the social studies or mathematics-science-health guides.

It is noted in Appendices B-D that teachers exposed the comparison group students to the twenty-one recommended career orientation strategies or techniques without any degree of uniformity. About half of these recommendations were utilized much more than were the others. While the infused career orientation program, was implemented in all programs studied it appears that the emphasis may have been put on the least appropriate strategies or techniques. It should be ascertained whether the emphasis should be on 1) more workers of the community speaking to classes, 2) more class trips to business and industrial work sites, or

3) more "hands on" or "try out" experiences. It is possible that the lesser utilized recommendations would have resulted in significant effects on the career development and/or the academic achievement of the experimental group students participating in the study. The career orientation curriculum guides (sample pages are found in Appendices E-I) consistently recommended experiential activities such as the aforementioned; however, these were among the least used of the twenty-one program strategies and techniques.

The findings of the study were not discouraging to the researcher, or the evaluation committee inasmuch as the data provided indications of the strategies or techniques which do not appear to be effective. Such information was not available to Danville, Virginia educators prior to the study, and can now be used to restructure and reevaluate the existing career orientation program.

SUMMARY

The null hypotheses were tested by use of a t test for two independent groups. No statistically significant differences were found between the data of the control and experimental groups at the fifth, sixth nor seventh grade levels. As a result, none of the eight null hypotheses stated in Chapter 1 were rejected. Therefore, the evaluation of the Danville, Virginia career orientation program disclosed no evidence of an effect on the career development nor on the academic achievement of middle school children.

In the discussion section of this chapter it was pointed out that the implementation of the twenty-one recommended strategies or techniques of the career orientation program was somewhat disproportionate in terms of the degree to which each was employed. Lesser utilized recommendations were cited as the strategies or techniques which might have, if implemented to a greater extent, resulted in significant effects.

Although the career orientation program, as implemented, did not appear to be effective, the study was not discouraging. Information was provided which will be helpful in future endeavors related to program improvement.

Chapter 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The Danville School Board has been committed since 1972 to the development of a quality career education program, kindergarten through adult and continuing education. The third phase of the total program was the development of a career orientation program which was integrated with the social studies curriculum and the mathematics-science-health curriculum of the school division's four middle schools. The program was developed during the 1975-76 school year and implemented during the following school year.

SUMMARY

Although the career orientation program was implemented in all four of Danville's middle schools during the 1976-77 school year, only two of these schools could be used for the purposes of the study because of a project on value clarification which was being conducted in the remaining two schools. The students of Edwin A Gibson Middle School and Irvin W. Taylor Middle School made up the total stratified population for this study. The three distinct strata were the fifth, sixth and seventh grade levels which make up the total middle school population.

The purpose of this study was to evaluate the career orientation program. The problem addressed was: "Does the career orientation program, as designed, improve the career development and heighten the academic achievement of the middle school students?" The study attempted to determine the effect of the infused career orientation program at the fifth, sixth and seventh grade levels by testing eight hypotheses which were stated in the null form. The hypotheses were stated as follows:

1. There will be no difference in the degree of change in the career choice attitudes of students participating in the program and those who do not.

2. There will be no difference in the degree of change in self-appraisal relative to careers between students participating in the program and those who do not.

3. There will be no difference in the degree of change in knowledge of occupations between students participating in the program and those who do not.

4. There will be no difference in the degree of change in job choosing skills relative to capabilities between students participating in the program and those who do not.

5. There will be no difference in the degree of change in planning skills relative to goals between students participating in the program and those who do not.

6. There will be no difference in the degree of change in social studies achievement between students participating in the program and those who do not.

7. There will be no difference in the degree of change in mathematics achievement between the students participating in the program and those who do not.

8. There will be no difference in the degree of change in science achievement between students participating in the program and those who do not.

A quasi-experimental pretest-posttest control group design was used for the evaluation. Comparison groups were established for each of the three grade levels, using procedures which were "random in effect." Control groups were determined by the random selection of one intact, but completely heterogeneous classroom per grade level from each of the two schools involved. The experimental groups were established by the random selection of students from the remaining grade level populations. This selection procedure provided control groups numbering forty-three fifth graders, forty-nine sixth graders and forty-eight seventh graders. Fifty experimental group students were selected for each of the three grade levels.

The instruments used to collect data relative to the eight null hypotheses of this study were thought to be reliable and valid as reported in the literature.

The Career Maturity Inventory, with the exception of part five of the *Competence Test*, was used for career development aspects of the study, and the appropriate subtests of the *Blue Level* of SRA's Achievement Series were used to test for improvements in social studies, mathematics and science. The same tests were administered for both the pretest and the posttest.

During the treatment period, which included most of the 1976-77 school year, twelve subjects were lost from the comparison groups. Since this mortality could have jeopardized the internal validity of the study, and inasmuch as analysis of the evaluation data could be based only on the scores of those subjects who were available for both the pretest and the posttest, the researcher undertook to determine any differences which might have existed between the comparison groups as a result of mortality. To achieve this the pretest data from the mathematics, social studies and science subtests were analyzed for the students who remained in the comparison groups throughout the treatment. This analysis was undertaken in an effort to determine any differences which might have existed between the control and experimental groups when the posttest was administered. The control and experimental group data for the three grade levels, even after mortality, were evidenced by a t test for two independent groups (two-tailed—$p. < .05$) to be less than significantly different. From this analysis evidence was found which supports both the equality of the comparison groups and the internal validity of the study.

A _t_ test for two independent groups was used for the purpose of analyzing the posttest differences in scores between the control and experimental groups of the three grade levels. The differences found were ultimately used to test the eight null hypotheses of the study, at each grade level. The findings were rather definitive in that no statistically significant differences were determined between any of the control and experimental group data. As a result, none of the eight null hypotheses could be rejected for any of the comparison groups. The cited data yielded no evidence which would support the effectiveness of the Danville career orientation program, in terms of enhancement of career development or heightening of academic achievement. It is important to point out, however, that no evidence was found which would tend to indicate that the treatment caused career development to be slowed. Nor was any evidence found which would indicate the treatment caused a lowering of academic achievement.

CONCLUSIONS

Several conclusions emerged from a study of the results of this research. These conclusions, along with brief inferences are found below:

1. The career orientation program, as implemented and as measured by the instruments used for the study, did not appear to affect the career development nor the academic achievement of the middle school students who received the treatment during the 1976-77 school year. It is noted, however, that the monitoring reports completed by teachers throughout the treatment period provided evidence which hinted that certain of the recommended strategies or techniques for implementation were used less than was planned in the program guides. Generally, the strategies or techniques used least, i.e., resource persons, field trips and "try-out" experiences, were the type which have been traditionally thought of as those having the most impact on career development.

2. Based purely on the statistical analysis and the results of the study, it would appear that the career orientation program, as designed, was not an effective treatment for enhancing career development and heightening academic achievement. If the results of other studies which are found in the literature are taken into consideration; however, it could be concluded that there were insufficient data and less than adequate measuring devices available to consider this as a conclusive investigation.

3. Additional research is needed in order to properly determine the effectiveness of the Danville, Virginia career orientation program. The total program was designed to be infused with the social studies and the mathematics-science-health curricula throughout the fifth, sixth and seventh grades. Therefore, a much more conclusive study might be conducted when students have experienced more than one year of the treatment.

4. Middle school teachers need more training in the implementation of the career orientation program. Typically, teachers do not have (or do not feel they have) the training to effectively implement an infused career education program. Also, many misunderstandings exist among teachers of the middle grades concerning basic career education philosophy, concepts and objectives.

5. Further research is needed on the various theories of career development. Theories of career development and its various stages have not been thoroughly researched, making it very difficult to evaluate the effects of career education programs. The outcome of recommended additional research would also enhance the worthiness of career education programs in the minds of teachers.

RECOMMENDATIONS

Based on the conclusions of this study the following recommendations are made:

1. A greater emphasis should be placed on the career orientation program which was designed for the middle school students of Danville, Virginia. If this program is to be effective, improvements are needed in the degree of implementation and/or in the infused program itself. When improvements are made in the program, they should be evaluated through research and evaluation studies. Longitudinal studies on comparisons of the findings could be undertaken on the various treatment refinements and thus provide for a continuous updating of the program.

2. Further research should be done on the effectiveness of the full three year career orientation program as it was designed. An effort should be made to determine whether the complete program, including the fifth, sixth and seventh grades, enhances the career development or heightens the academic achievement of students after three full years of the treatment. The standardized instruments used for this study might prove to be more beneficial in evaluating the program after the students have been exposed to the entire three years of the treatment.

3. Follow-up studies should be conducted concerning students who have experienced the career orientation program in the middle schools of Danville, Virginia to determine whether or not the treatment had an effect

on their career decisions later in life. Although no statistically significant differences were found between the control and experimental groups of this study at the time of the data analysis, the long term effects among students who received the treatment could be significant.

4. Extensive in-service education should be provided teachers before a career education program is implemented. It has been the experience of this researcher that teachers find it difficult, initially, to completely understand the philosophy, concepts and objectives of an infused career education program.

5. The teacher preparation programs at colleges and universities should include instruction on the factors involved in occupational choice, career development theory and other aspects of the work world with which young people should become familiar prior to making career decisions. Teachers must be able to relate the classroom to the work world and help students to understand the career challenges which lie before them.

6. Much additional research should be conducted on career education programs designed for students of upper elementary grades. For comparison purposes this research should be conducted in both experimental and field study or quasi-experimental settings. A shortcoming of many field studies is the need for better controls. Nevertheless field studies are realistic and more should be under-

taken in the area of career education program effectiveness.

7. Research should be undertaken which would compare the effectiveness of career education programs which are highly encouraged and emphasized by school administrators, with programs where strategies and implementation are left to the teachers with strong administrative support.

8. New instruments should be developed which are more sensitive to measurement of the many stages of career development.

9. Career education programs should be developed around specific behavioral objectives. Many evaluation and/or measurement problems could be greatly simplified leading to a more comprehensive understanding of program effectiveness.

10. This study should be replicated as nearly as possible in other school divisions. However, teachers should be given additional career education training in an effort to determine whether the program implementation could be improved, and whether a resulting difference would be found in the outcomes.

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APPENDICES

APPENDIX A

Monitoring Report

Career Orientation Monitoring Report

Teacher No. ________ (For use by the Principal)

The twenty-one, generally stated items below, represent the teaching strategies and techniques which are included in the fifth, sixth and seventh grade Career Orientation Guides.	Please indicate the number of times you have purposefully used the methods stated to the left of this sheet in your teaching during the past nine weeks.

	Experimental Classes	Control Classes
1. Incorporated the study and discussion of different life-styles as they relate to occupations.		
2. Integrated academic instruction with the teaching of the free enterprise system or consumerism.		
3. Utilized career games and role playing in "What's My Line?" type classroom activities.		
4. Assigned research projects on job opportunities in the community by having the student utilize the newspaper "want ads," write the various business and industrial concerns of the community for information and/or interview a representative of the Virginia Employment Commission.		

	Experimental Classes	Control Classes
5. Had students keep charts on stocks from the newspaper stock reports while studying occupations in this field and/or the free enterprise system.		
6. Provided opportunities for students to design, produce and display bulletin boards which show relationships between the subject matter being studied and occupations.		
7. Encouraged students to begin narrowing their occupational choices by conducting class discussions of the various career clusters.		
8. Stressed job satisfaction rather than economic success as being important to career choices.		
9. Emphasized the need for people to know themselves in terms of abilities, interests, aspirations and attitudes when making career choices.		
10. Utilized the career orientation filmstrips, tapes and other media available in the school library to supplement instruction.		

	Experimental Classes	Control Classes
11. Invited workers in the community to speak to the class concerning their occupations and careers for the purpose of providing career models.		
12. Planned and facilitated trips to business and industrial work sites in the community to reinforce the relevance of subject-matter to occupations.		
13. Offered students "try out" or "hands on" experiences as a part of the classroom instruction to facilitate their own selection of the various types of work which they enjoy most.		
14. Provided or suggested individual student projects which will, as a result, cause students to become more knowledgeable about various occupations.		
15. Involved the students with the work of a typical civic organization by undertaking community projects.		
16. Promoted class discussions of career interests as they relate to possible occupations.		

	Experimental Classes	Control Classes
17. Designed lesson plans which related the regular subject matter to examples of practical use in earning a living.		
18. Assigned research projects on the many services available in the community and the occupations related to those services.		
19. Emphasized the obvious necessity and value of all jobs.		
20. Encouraged students to develop a positive work ethic by emphasizing the development of a personal philosophy toward work.		
21. Demonstrated by examples the fact that rapid changes in job technology and labor market demands require academic proficiency on the part of workers.		

APPENDIX B

Average Exposure to Treatment

Fifth Grade

Average Number of Times Fifth Grade Teachers Exposed Control and Experimental Group Students to the Career Orientation Strategies or Techniques

Rank	Strategy or Technique	Control Group	Experimental Group
1.	Emphasized the obvious necessity and value of all jobs.	1.25	22.24
2.	Encouraged students to develop a positive work ethic by emphasizing the development of a personal philosophy toward work.	12.75	21.48
3.	Designed lesson plans which related the regular subject matter to examples of practical use in earning a living.	.00	19.16
4.	Promoted class discussions of career interests as they relate to possible occupations.	.00	15.64
5.	Emphasized the need for people to know themselves in terms of abilities, interests, aspirations and attitudes when making career choices.	.00	13.96
6.	Stressed job satisfaction rather than economic success as being important to career choices.	.00	13.20
7.	Demonstrated by examples the fact that rapid changes in job technology and labor market demands require academic proficiency on the part of workers.	.00	12.08

Rank	Strategy or Technique	Control Group	Experimental Group
8.	Incorporated the study and discussion of different life-styles as they relate to occupations.	.00	11.12
9.	Utilized the career orientation filmstrips, tapes and other media available in the school library to supplement instruction.	1.25	10.56
10.	Integrated academic instruction with the teaching of the free enterprise system and consumerism.	.00	10.40
11.	Encouraged students to begin narrowing their occupational choices by conducting class discussions of the various career clusters.	.00	6.56
12.	Provided or suggested individual student projects which would, as a result, cause students to become more knowledgeable about various occupations.	.00	5.92
13.	Provided opportunities for students to design, produce and display bulletin boards which showed relationships between the subject matter being studied and occupations.	.00	5.44

Rank	Strategy or Technique	Control Group	Experimental Group
14.	Offered students "try out" or "hands on" experiences as a part of the classroom instruction to facilitate their own selection of the various types of work that they enjoy most.	.00	11.12
15.	Assigned research projects on the many services available in the community and the occupations related to those services.	.00	2.80
16.	Assigned research projects on job opportunities in the community by having the student utilize the newspaper "want ads," write the various business and industrial concerns of the community for information and/or interview a representative of the Virginia Employment Commission.	.00	2.40
17.	Invited workers in the community to speak to the class concerning their occupations and careers for the purpose of providing career models.	.00	2.28
18.	Utilized career games and role playing in "What's My Line?" type classroom activities.	.00	2.08

Rank	Strategy or Technique	Control Group	Experimental Group
19.	Planned and facilitated trips to business and industrial work sites in the community to reinforce the relevance of subject matter to occupations.	.00	1.80
20.	Involved the students with the work of a typical civic organization by undertaking community projects.	.00	.80
21.	Had students keep charts on stocks from the newspaper stock reports while studying occupations in this field and/or the free enterprise system.	.00	.02

APPENDIX C

Average Exposure to Treatment

Sixth Grade

Average Number of Times Sixth Grade Teachers Exposed Control and Experimental Group Students to the Career Orientation Strategies or Techniques

Rank	Strategy or Technique	Control Group	Experimental Group
1.	Emphasized the obvious necessity and value of all jobs.	6.00	23.44
2.	Encouraged students to develop a positive work ethic by emphasizing the development of a personal philosophy toward work.	4.50	22.40
3.	Emphasized the need for people to know themselves in terms of abilities, interests, aspirations and attitudes when making career choices.	3.00	20.00
4.	Incorporated the study and discussion of different life-styles as they relate to occupations.	3.25	18.20
5.	Demonstrated by examples the fact that rapid changes in job technology and labor market demand require academic proficiency on the part of workers.	3.75	17.36
6.	Promoted class discussions of career interests as they relate to possible occupations.	3.00	15.40
7.	Designed lesson plans which related the regular subject matter to examples of practical use in earning a living.	4.00	15.00

Rank	Strategy or Technique	Control Group	Experimental Group
8.	Stressed job satisfaction rather than economic success as being important to career choices.	1.75	12.76
9.	Integrated academic instruction with the teaching of the free enterprise system and consumerism.	4.5	11.12
10.	Utilized the career orientation filmstrips, tapes and other media available in the school library to supplement instruction.	1.75	9.20
11.	Encouraged students to begin narrowing their occupational choices by conducting class discussions of the various career clusters.	1.50	5.48
12.	Provided or suggested individual student projects which would, as a result, cause students to become more knowledgeable about various occupations.	1.00	3.16
13.	Utilized career games and role playing in "What's My Line?" type classroom activities.	.00	2.92
14.	Provided opportunities for students to design, produce and display bulletin boards which showed relationships	.75	2.20

Rank	Strategy or Technique	Control Group	Experimental Group
	between the subject matter being studied and occupations.		
15.	Assigned research projects on the many services available in the community and the occupations related to those services.	1.75	2.00
16.	Invited workers in the community to speak to the class concerning their occupations and careers for the purpose of providing career models.	1.00	1.64
17.	Offered students "try out" or "hands on" experiences as a part of the classroom instruction to facilitate their own selection of the various types of work that they enjoy most.	1.20	1.56
18.	Assigned research projects on job opportunities in the community by having the student utilize the newspaper "want ads," write the various business and industrial concerns of the community for information and/or interview a representative of the Virginia Employment Commission.	.75	1.32
19.	Had students keep charts on stocks from the newspaper stock reports while studying occupations in	2.00	1.08

Rank	Strategy or Technique	Control Group	Experimental Group
	this field and/or the free enterprise system.		
20.	Planned and facilitated trips to business and industrial work sites in the community to reinforce the relevance of subject-matter to occupations.	.50	.92
21.	Involved the students with the work of a typical civic organization by undertaking community projects.	.00	.84

APPENDIX D

Average Exposure to Treatment

Seventh Grade

Average Number of Times Seventh Grade Teachers Exposed Control and Experimental Group Students to the Career Orientation Strategies or Techniques

Rank	Strategy or Technique	Control Group	Experimental Group
1.	Emphasized the obvious necessity and value of all jobs.	8.25	19.20
2.	Emphasized the need for people to know themselves in terms of abilities, interests, aspirations and attitudes when making career choices.	3.00	17.10
3.	Designed lesson plans which related the regular subject matter to examples of practical use in earning a living.	1.50	16.44
4.	Encouraged students to develop a positive work ethic by emphasizing the development of a personal philosophy toward work.	6.75	14.10
5.	Demonstrated by examples the fact that rapid changes in job technology and labor market demands require academic proficiency on the part of workers.	2.25	13.14
6.	Incorporated the study and discussion of different life-styles as they relate to occupations.	1.50	11.76
7.	Promoted class discussions of career interests as they relate to possible occupations.	1.50	11.46

Rank	Strategy or Technique	Control Group	Experimental Group
8.	Utilized the career orientation filmstrips, tapes and other media available in the school library to supplement instruction.	1.50	10.68
9.	Stressed job satisfaction rather than economic success as being important to career choices.	1.50	9.36
10.	Encouraged students to begin narrowing their occupational choices by conducting class discussions of the various career clusters.	.00	8.10
11.	Integrated academic instruction with the teaching of the free enterprise system and consumerism.	.18	7.02
12.	Provided or suggested individual student projects which would, as a result, cause students to become more knowledgeable about various occupations.	.00	5.76
13.	Offered students "try out" or "hands on" experiences as a part of the classroom instruction to facilitate their own selection of the various types of work that they enjoy most.	.00	3.54

Rank	Strategy or Technique	Control Group	Experimental Group
14.	Provided opportunities for students to design, produce and display bulletin boards which showed relationships between the subject matter being studied and occupations.	.75	2.52
15.	Planned and facilitated trips to business and industrial work sites in the community to reinforce the relevance of subject matter to occupations.	.75	1.38
16.	Invited workers in the community to speak to the class concerning their occupations and careers for the purpose of providing career models.	.00	1.32
17.	Assigned research projects on job opportunities in the community by having the student utilize the newspaper "want ads," write the various business and industrial concerns of the community for information and/or interview a representative of the Virginia Employment Commission.	.00	1.14
18.	Utilized career games and role playing in "What's My Line?" type classroom activities.	.75	.78
19.	Assigned research projects on the many services available in	.00	.54

Rank	Strategy or Technique	Control Group	Experimental Group
	the community and the occupations related to those services.		
20.	Involved the students with the work of a typical civic organization by undertaking community projects.	.00	.36
21.	Had students keep charts on stocks from the newspaper stock reports while studying occupations in this field and/or the free enterprise system.	.00	.00

APPENDIX E

Sample Pages from the Social Studies Curriculum Guide

SOCIAL STUDIES CURRICULUM GUIDE

MIDDLE SCHOOLS (GRADES 5-7)

DANVILLE PUBLIC SCHOOLS

FALL '74

REVISED MAY 1976

Social Studies Curriculum Guide

(With Reading, Literature and Career Orientation Correlation)

Middle Schools (Grades 5-7)

Danville Public Schools

Fall '74

PREFACE

The Danville Public Schools have initiated middle schools as the best means to help students in the transition from elementary school to junior high school. This guide attempts to correlate language arts, social studies and career orientation in the fifth, sixth, and seventh grades. It is not designed to teach the skills of reading, spelling, or those skills included in the Language Arts Curriculum Guide. However, when teaching those skills included in the Language Arts Curriculum Guide it is anticipated that they too will be correlated with career orientated items.

There are four basic concepts for the language arts/social studies program at each grade level with a suggested time for coverage based on the relative importance of the topic. For the various grade levels these concepts are as follows:

Fifth Grade

I. Life Styles and Adaptations
II. Utilization of Resources
III. Economic Choice
IV. People and Their Political Systems

Sixth Grade

I. Life Styles and Adaptations
II. Resources and Economic Decisions
III. People and Their Political Systems
IV. Social and Environmental Interaction

Seventh Grade

I. Life Styles and Adaptations
II. Social and Environmental Interaction
III. Resources and Economic Decisions
IV. America's Political System

With each concept is an outline of social studies material with references to various reading or literature books, the Ethnic Studies in the Social Studies Curriculum prepared in 1973, and the spelling texts for vocabulary. It is hoped that fifth and sixth grade teachers will correlate spelling words with these concepts throughout the year in an effort to complete references for the vocabulary column.

This guide was written to aid teachers, not to dictate what classroom routine must be. It is not a completed product. Suggestions are needed from every middle school teacher and administrator in regard to resources and strategies. In this manner new materials and suggestions can be added and revisions made to give us a more comprehensive guide.

Teachers should realize that the reading or literature selections suggested should not comprise the totality of instruction in those areas. Other selections may be correlated, and many others should be read as separate entities. Trial and error will surely dictate changes in your approaches, many of which may be incorporated in a program revision.

Curriculum Guide Key

O.H.4 - Open Highways 4
O.H.5 - Open Highways 5
O.H.6 - Open Highways 6
B.J. - Bold Journeys
I.N.W. - Into New Worlds
R.R. - Radio Reading
R.A.P. - Reading Achievement Program
A-R - Adventures for Readers 7
A-Y - Adventures for You 7
S.7 - Searchlights 7
V.7 - Voices A

II. Utilization of Resources

Major emphasis: Economics and geography

Suggested time: 9 weeks

Social Studies Concepts and Values Level 5	Reading	Ethnic Studies in the Social Studies Curriculum Grade 5	Spelling 5
Unit III - A People's Resources 1. A Mountain Farm (Italy) pp. 120-130 2. A Dry Region (California) pp. 131-142 3. A Modern Nation (steel production) pp. 143-149 4. Creating New Resources pp. 150-165	Essays 27, 54, 12, 25, 51 - R.R.		
Unit III - in general	From Forests to Farms - B.J. p. 56 Hold Back the Hunter - B.J. p. 153 Curs to Save - B.J. p. 166 The Treasures They Found - B.J. p. 86 The Gulls - O.H. 5 p. 116 The Year There Was No Summer - O.H. 5 p. 34 Eight Against Death - O.H. 5 p. 258 RAP E4-2 E4-3 E4-6 E4-8		

SOCIAL STUDIES
Grade 6

I. Life Styles and Adaptations (Units 1, 2, 3) - 12 weeks

The major emphasis in this area is anthropology, psychology, and sociology.

Social Studies Concepts and Values Level 6	Reading	Ethnic Studies in the Social Studies Curriculum Grade 6	Spelling 6
A. People and the traits they share	Frank Buck and the Man-Eating Tiger - O.H. 5 (92) Eskimo Boy - O.H. 5 (383) Hats Off to the Daring Trappers! B.J. (92) Blazing a Desert Trail - I.N.W. (114) The Ernie Davis Story - O.H. 6 (34) Bluey - O.H. 6 (151) Burma Boy - O.H. 6 (379) R.R. Essay 2, 5, 10, 23, 31, 35 38	I. II. III. IV. Suggested Strategies - I. A. B. C. VI. B. II. A. B. C. VII. A. B. III. A. IV. A. B.	
1. Likenesses and Differences p. 3	Viva Monterey - O.H. 5 (24) Good, Bad, or Just Different? B.J. (312)	I. A. B. C.	
2. One Race - Two Cultures p. 11		II. A. B. C.	
3. A Culture in Change p. 21	Footprints of the Smoke Dragon B.J. (196)	III. A. B.	
4. Gathering Data on Traits p. 29		IV. A. B. C.	

Social Studies Concepts and Values Level 6	Career Oriented Items	Materials, Suggested Activities, Equipment and Aids
A. People and the traits they share	1. All people's basic personal needs: to eat to sleep to work to have shelter 2. Professional football	1. Social Science text 2. Health text - nutrition 3. Health food posters (teacher made) 4. A Guide for Developmental Vocational Guide - Oklahoma
1. Likenesses and Differences	1. Professional baseball	1. Open Highways and Workbook Text 5 2. Speaker (former baseball player)
2. One Race - Two Cultures	1. Chinese restaurant 2. Health inspector	1. Health book - food unit 2. Speaker - restaurant owner 3. Speaker - Health Department
3. A Culture in Change		
4. Gathering Data on Traits	1. Graphs on careers	1. Math text - tables 2. Graphs skills (Weekley Reader p. 6, 8, 18, 3. Page 36, 50 in Social Science Activity Book Westinghouse: 22-6220 Our Society #3 Customs and Traditions #6 The Family ERCA: 9463 Keeping the Balance QED: People Are Human #2 Customs and Rules #3 Male and Female Eye Gate: #X216C Series: Leisure Time Free Time Is Not So Free Frank Schaffer: Career Exploration Cards #26, 28, 29

Social Studies
Grade 7

I. Life Styles and Adaptations

The major emphasis in this area is anthropology, sociology, and psychology. The suggested length of time to devote to the topic is 8 weeks.

Social Studies Quest for Liberty	Literature	Ethnic Studies in the Social Studies Curriculum Grades 7, 8, 9	Spelling 7
A. English immigration p. 48 - 62 1. Volunteer immigration 2. Forced immigration		Course Objective 2	Lessons 27, 29
B. Life in the English Colonies pp. 62-72		Course Objective 2	Consult p. T. 28
1. New England colonies	Voices 7 The Sorcerer's Apprentice p. 276 Adventures for You 7 They Call Me a Witch p. 284 The Witch of Willowby Road p. 281 Adventures for Readers Book I Old Sly Eye p. 273		Correlate Social Studies terms
2. Middle colonies			
3. Southern colonies	Searchlights 7 Daniel Boone p 106 The Adventures of Colonel Boone p. 99 A-Y Virginia p. 372		

Careers
Grade 7

The following are some suggested careers and strategies to be correlated with the Social Studies Guide. Two films available for use to introduce the concept of career orientation are: "Finding Your Life's Work" and "Diversified Occupations." All films are available from Teaching Materials Center.

Westinghouse - Career Awareness
    1. King Eric's Curious Kingdom
  Our Society - Custom and Tradition
    1. Why do I have to . . . . ?

Coronet - Selecting a Vocation
    1. Evaluating Yourself
    2. Evaluating A Job

I. Life Styles and Adaptations

Social Studies *Quest for Liberty*	Career Oriented Items	Materials, Suggested Activities, Equipment and Aids
A. English Immigration	Historian	
B. Life in the English Colonies	Geneologist	
	Early crafts (furniture, pottery, gunsmith)	Trip to Old Salem Have students demonstrate early crafts after doing research Community resource people to demonstrate crafts
	Minister	Resource people from local church
	Church school director	
	Music	
		A-Y, p. 356

APPENDIX F

Sample Pages from the Fifth Grade Mathematics-Science-Health Guide

DANVILLE PUBLIC SCHOOLS

CAREER ORIENTATION
5th GRADE
MATH - SCIENCE - HEALTH

MAY 1976

MATH

Career Orientation	Materials	Activities
II. Addition - I.M.S. Holt School Mathematics Chapter 3		
1. Salesman	1. Flash cards	1. Visit supermarket with planned menu and budget. Compare costs and buy for "Food Day." Correlate with unit on Foods in Health. Interview manager.
2. Professional Sportsman	2. Place value charts	
3. Cashier	3. Cassette ND 1,2 Cassette AA 25-27	2. Invite car salesman to set up auction in classroom. Figure cost of added accessories. Set up loan for purchase of car.
4. Banker	4. Addition fact game	
5. Home Economist		
6. Agriculturalist		
7. Accountant		
8. Dietician		

Career Orientation	Materials	Activities
III. Subtraction - I.M.S. Holt School Mathematics Chapter 3		
1. Banker	1. Cassette AA 26 Cassette AA 27	1. Visit a bank (correlate with unit on Economics in Social Studies)
2. Accountant	2. Flash cards	2. Balance a check book
3. Transportation Agents	3. Subtraction facts game	3. Make a bar graph on population change in last 10 years. Invite speaker from Statistics Bureau.
4. Homemakers		4. Home economist speaker to discuss "Budgeting"
5. Math Teachers		

Career Orientation	Materials	Activities
IV. Multiplication - I.M.S. Holt School Mathematics Chapter 4		
1. Math Teacher	1. Cassette AA 28-30 Cassette AA 33,34	1. Make mobile of different careers involving addition, subtraction, and multiplication and division
2. Salesman	2. Flash cards	2. Interview a farmer a. Plot on graph paper pounds yielded per acre over last five years b. Plot on graph money per acre farmer obtained
3. Carpenter	3. Multiplication bingo game	3. Invite pilot of an airplane to discuss "Computation of Mileage and Charting a Course"
4. Engineer	4. Multiplication fact game	
5. Pilot	5. Matrix	

Career Orientation	Materials	Activities
VI. Fractions - I.M.S. Holt School Mathematics Chapter 8		
1. Statistician	1. Cassette FF 1-3 Cassette FF 23	1. Visit bakery
2. Homemaker	2. Fraction cut outs	2. Sales personnel talk to class on Marking Merchandise for Sale
3. Technician	3. Chart of elements	3. Musician demonstrate different rhythms
4. Sales Person		4. Pharmacist speak on fractional composition of medicine
5. Pharmacy		5. Doctor speak on "Chemical Make Up in the Body" - correlate with unit in Health
6. Musician		
7. Doctor		
8. Geologist		

SCIENCE

Career Orientation	Materials	Activities
Module 1 - Size, Scale, and Models	Films:	1. Guest speaker to explain blueprints
1. Cartographer	0101 - The Globe and Our Round Earth	2. Make scale models of classroom or school grounds
2. Architect	0448 - Map Skills: Using Different Maps Together	3. Visit air traffic control center
3. Navigator	0425 - Maps Add Meaning to History	4. Visit a construction site.
4. Engineer	0332 - Maps Are Fun	5. Have a Model Display or a Hobby Display of things made by pupils.
5. Designer	0318 - Transportation Around the World	
6. Model Builder	*Filmstrips:* 1. Learning Resources Company Where do we get our Lumber? Where do we get our Paper? (Group I Where does it come from?) 2. Guidance Associates People Who Work in Science: People Who Create Art Designer People Who Make Things: Model Builder Aircraft Assembler	

Career Orientation	Materials	Activities
Module 2 - Relative Motion	Films:	1. Have display of photography. Have photographer explain how motion affects pictures.
1. Photographer	0254 - The Earth's Movements	2. Visit railroad station to see how traffic is controlled
2. Train Conductor	0256 - How Weather is Forecast	
3. Pilots	0088 - Lightening and Thunder	3. Make weather instruments to measure direction and force of winds
4. Meterologists	0255 - Story of a Storm	4. Visit weather bureau
	0382 - How Weather Helps Us	5. Experiment with toy boats and planes to see effects of currents
	2312 - Laws of Motion	
	2222 - Airport in Jet Age	
	2153 - Boats and Jets	
	0138 - The Busy Airport	
	0137 - The Busy Harbor	
	2207 - The Freight Train	
	0205 - The Harbor	
	2239 - A Ship Comes Home	
	Filmstrips: People At Work (Set 2) - At Work in Transportation Eye Gate Filmstrip: The Earth As a Clock	

Career Orientation	Materials	Activities
Module 3 - Pushes and Pulls 1. Machine designers and operators 2. Chemist 3. Machinist	Films: 0407 - The World of Molecules Filmstrips: Learning Resources Company Where does it come from? Group I Where do we get our paper? Where do we get our bread? Where does it come from? Group II Where do we get our textiles? Where do we get our iron?	1. Experiment with simple machines and complex machines. 2. Visit Dan River Mills. 3. Field trip to Star Paper Tube, Inc.

Career Orientation	Materials	Activities
Module 4 - Adaptations 1. Naturalist 2. Forest Ranger 3. Conservationist 4. Botanist 5. Biologist 6. Veterinarian 7. Taxidermist 8. Park Ranger	Any films listed under the following subheadings are suitable for this unit: Bird Series Insects and Their Relatives Life Science Filmstrips: Learning Resources Company Where does it come from? Group I Where do we get our lumber? Where do we get our bread? Where do we get our seafood? Guidance Associates People Who Work In Science: Ocean Life Scientist Learning Resources Company So Many Jobs to Think About (Set 1) Veterinarian	1. Visit wildlife or game reserve 2. Community conservation project 3. Visit by veterinarian 4. Raise plants or animals in class 5. Visit to Chatham Planetarium and Cultural Center

HEALTH

SUPPLEMENT - HEALTH FOR ALL

Career Orientation	Materials	Activities
I. About Yourself		
1. Health Services	1. Model of human body	1. Invite a doctor to speak to class on "Wonderful Machine - The Body"
2. Nurse	2. Films: 0391 - Exploring Your Growth 0237 - Growing Up Day by Day	2. Invite someone from Health Clinic to speak on "Health Services" - demonstrating different instruments used in protecting body
3. Doctor	3. Filmstrip: X8 You the Human Being	3. Visit hospital
4. Radiologist		4. Make a bulletin board using an outline map of world; each child is required to draw or find picture of worker related to body or Health Services
5. Pathologist		
6. Hearing - Speech Therapist		
7. Dentist and Dental Technician		

Career Orientation	Materials	Activities
II. Your Senses and How They Work 1. Optometrist 2. Optical Technician 3. Nurse's Aide 4. Dental Hygiene 5. Laboratory Technician 6. Medical Photographer 7. Audiologist 8. Speech - Hearing Teacher 9. Salesman of Hearing Aids 10. Neurology 11. Radiologist 12. Physical Therapy	1. Films: 0017 - See Better - Healthy Eyes 0385 - Our Senses: What They Do for Us 2. Filmstrips: H1 - Health and Eyes X9 - You and Your Five Senses X10 - You and Your Eyes X11 - You and Your Ears X12 - Your Senses of Smell and Touch X13 - Your Sense of Touch	1. Invite an optometrist to speak to class and demonstrate instruments 2. Invite Speech-Hearing Teacher to test hearing and talk to children on "The Ear" 3. Make posters showing different senses and related workers 4. Make display of instruments used in testing or examining senses 5. Bring in old X-rays

Career Orientation	Materials	Activities
IV. Bones and Muscles		
1. Archeology 2. Orthopedic Surgeon 3. Physical Therapy 4. Paramedic 5. Service People (ambulance driver, maintenance, guides) 6. R.N. Nurses 7. L.P.N. Nurses 8. Veterinarian	1. Films: 0198 - Muscles and Bones of the Body 0176 - Posture Habits 0341 - Telephone for Help 2. Filmstrips: X28 - Muscular System R X27 - Skeletal System	1. Visit Life and Science Museum (Durham, N.C.) 2. Invite archeologist to discuss "Fossils"; correlate with Social Studies Unit on Early Man 3. Visit Rescue Squad - interview paramedic 4. Visit Physical Therapy section of hospital or have Physical Therapist speak to class 5. Show Red Cross filmstrip - available through American Red Cross

Career Orientation	Materials	Activities
X. Health Laws 1. Environmentalist 2. Ecologist 3. Sanitation Department 4. Health Services 5. Nurse 6. Veterinarian	1. Stone Pendulum Press: Our Troubled Waters The Unseen Enemy The World's Exhaust 2. Eye Gate: Workers for the Public Welfare 3. Guidance Associates: People Who Help Others Community Organizer Day Care Worker	1. Panel discussion among students of "Laws that Control Health in our City." 2. Make posters of Good Health Laws. 3. Invite Public Health Nurse to speak on "The Need for Health Laws and Immunization Programs.' 4. Survey pupils attitudes on anti-litter campaign and related vocations. 5. Work in conjunction with City Beautification Committee. 6. Veterinarian to speak and demonstrate "Care and Health of Pets." 7. Invite someone from the "Meat Packing Company" or a restaurant manager to talk on "Sanitation Laws" that govern their business.

APPENDIX G

Sample Pages from the Sixth Grade Mathematics-Science-Health Guide

DANVILLE PUBLIC SCHOOLS

CAREER ORIENTATION
6th GRADE
MATH - SCIENCE - HEALTH

MAY 1976

MATH

I.M.S. - Individualized Mathematics System
H.S.M. - Holt School Mathematics

Career Orientation	Materials	Activities
I. Numeration - I.M.S. (H.S.M.) Chapters 1, 6, 9		
1. Homemakers 2. Sales Persons 3. Plumbers 4. Farmers 5. Ticket Agent 6. Banker 7. Math Teacher 8. Secretary	1. Play money in all denominations 2. Place value charts 3. Pictures depicting Roman numerals 4. Cassettes 5. Magazine articles on different occupations	1. Develop a T. V. program topic: "Know Your Job and Discover How It Relates to Mathematics" Procedure a. Select class members who are to participate on the program b. Select panel members and moderator c. Brief the participant of their job roles and make the participates knowledgeable of the basic skills of mathematics (numeration, addition, subtraction, multiplication) 2. Set up store; role playing consumer merchant 3. Make a job survey within classroom; engage in interviewing different parents to determine what specific skills or abilities in math are required for his job

Career Orientation	Materials	Activities
IV. Multiplication - I.M.S. (H.S.M.) Chapter 3		
1. C.P.A.	1. Multiplication Fact Cards	1. Invite contractor or carpenter to discuss "How to Measure and Build", calculating area and dimensions of structure
2. Math Teachers	2. Multiplication Bingo	
3. Maintenance Personnel	3. Multiplication Facts Game	2. Plan a trip, figure gas mileage and determine cost of a planned trip
4. Doctors		3. Compare cost of production of cars in U.S. with those produced in other countries; invite a car salesman from each category to discuss differences
5. Economist		
6. Clerks		
7. Contractors		
8. Architects		

Career Orientation	Materials	Activities
V. Division - I.M.S. (H.S.M.) Chapter 4		
1. Lawyer	1. Counters	1. Make time budget to plan for best use of school and out of school time
2. Real Estate	2. Flash cards	2. Make a scale drawing of the classroom; invite architect to speak on "Drawing Plans for a House"
3. Math Teacher	3. Play money	3. Engage in activity of finding the mean score of the football games
4. Economist	4. Place value chart	
5. Farmer	5. Cassettes ND10	
6. Architect	6. DD1-6	
7. Map Maker		

SCIENCE

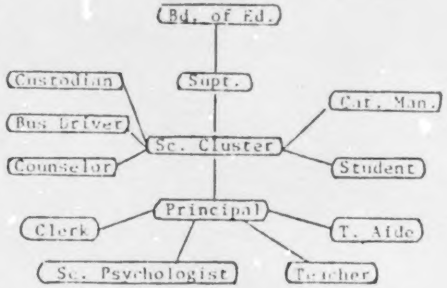
Career Orientation	Materials	Activities
Module I. Invisible Systems	Books: A Long Time Growing You're On The Air In The Face of the Sun Meigs Tower (An Open Door Book Series) Films: FS - 28 - Light In Our Daily Lives FS - 0383 - Light for Beginners SFS - 112 - Electrical Energy Filmstrips & Tapes: Veterinarian 242-1202-01 People Who Work in Science 301-588 Radiology Technician M213-8	1. Collect and classify different types of lens. 2. Examine objects and describe how lens are used (eyeglasses, microscopes, telescopes, etc.) 3. Do experiments with concave and convex lens. 4. Interview an optometrist. 5. Make a pinhole camera. 6. Invite an X-ray technician to class to discuss X-rays. 7. Get a copy of an X-ray from the local hospital. 8. Visit the nursing school and observe students studying X-rays. 9. Identify parts of a radio. 10. Visit a local radio station. 11. Demonstrate and explain the operation of different types of tape recorders. 12. Role play an announcer. 13. Visit the local telephone company. 14. Visit the local airport.

Career Orientation	Materials	Activities
Module II. Physical Models	Books: Son of the Land Up From El Paso (An Open Door Book Series) Holt Math Book, Grade 6, pages 316-317 Films: SFS 349 - Figure Drawing SFS 350 - Feature Placement SFS 351 - Sketching SFS 352 - Perspective SFS 353 - Design SFS 354 - Painting Transparencies: TR 266 - Cloud Types TR 267 - Local Wind Patterns TR 268 - Circulation of Atmosphere TR 269 - World Rainfall and Temperature Filmstrips & Tapes: At Work in Construction 242-1210-04 Construction Supervisor 242-1202-04 Model Builder 301-786 People Who Make Things 301-786 Furniture Designer 242-1202-04	1. Collect pictures of different types of furniture. 2. Make toothpick furniture. 3. Choose two pieces of furniture and draw examples of French, Spanish, American, etc. 4. Visit a local furniture factory. 5. Make a collage of different types of furniture. 6. Visit a house or building under construction and observe the inspection. 7. Have a meter reader visit the class. 8. Tour a local plant and have safety rules explained.

Career Orientation	Materials	Activities
Module III. Population	Books: On My Own Speaking Out Whatever You Can't Have What I'm About Is People People Are My Profession El Rancho De Muchachos So Many Detours My Tribe (An Open Door Book Series) Holt Math Book, Grade 6, pages 320-333 Filmstrips & Tapes: At Work In Food and Clothing 242-1210-02 Where Do We Get Our Seafood? 210-1685-04 Where Do We Get Our Meat? 210-1685-02	1. Visit a local supermarket. 2. Invite a store manager to class. 3. Set up a play "Supermarket" in class. 4. Assign students different roles in play "Supermarket." 5. Observe the function of the life-saving crew. 6. Do a report on the works of E. Franklin Frazier and Dr. Leomard Reissman. 7. Take a census on the interests of the students by having pen pals. 8. Interview someone in the community.

HEALTH

Career Orientation	Materials	Activities
II. A Healthful Community Helps All of Us	1. Filmstrips - Jobs in Health Services	1. Make charts and list of words of good personality traits.
A. Water Treatment Staff	2. Lead The Field - Earl Nightingale	2. Have students write a theme of their strengths and weaknesses.
B. Sanitation Engineer	3. Kit - Manpower and Natural Resources	
C. Art Specialist in the School		3. Make a collection of jobs they would like to do.
D. Representative from EPA to discuss Air Quality Control		4. Engage in research - Determine whether certain professions or jobs require specific skills, aptitudes, interest, preparation, and abilities.
		5. Role play - Employer - Employee Using positive and negative attitudes about the job.
		6. Draw chart - adding segments as careers are introduced.
		7. Visit Cafeteria.
		8. Interview City Official to find out what is being done about pollution.
		9. Field trip to Water Filtration Plant.
		10. Make models of Filtration Plant, Sewage Plant.
		11. Compile biographical sketches of individuals in research who have contributed to medicine.

Career Orientation	Materials	Activities
IV. Healthful Living At Home A. Red Cross Volunteer B. Electrical Repairman	1. Cassettes - Secrets by Maxwell Maltz	1. Plan menus. 2. Involve students in club activities such as a Red Cross Club in which certain techniques are taught. 3. Draw posters - illustrating Getting Along With The Family. 4. Make job family charts - Example:  Bd. of Ed. Supt. Custodian Bus Driver Counselor Sc. Cluster Caf. Man. Student Principal Clerk T. Aide Sc. Psychologist Teacher 5. Game - Password using words related to the unit 6. Panel - What's My Line.

Career Orientation	Materials	Activities
IX. The Abuse of Drugs 1. Pharmacist 2. Social Worker to discuss drugs 3. Representative from the Alcoholic Rehabilitation Clinic 4. Policeman	1. Filmstrip and tape: Drug Misuse and Your Health 2. Filmstrip and tape: Tobacco and Your Health 3. Filmstrip and tape: Alcohol and Your Health 4. Filmstrip and tape: Drugs and Your Health 5. Filmstrip and tape: Laboratory Technician 6. Film: Smoking - Past and Present 33910 (State) 7. Film: Drug Scene 73709 (State)	1. Have resource person to speak on Drugs. 2. Interview a policeman and report to class concerning the usage of drugs in Danville and the penalties imposed. 3. Make posters showing Harmful Effects of Drugs. 4. List groups in Danville that are trying to control drug abuse. Find out what each is doing to stop drug abuse.

APPENDIX H

Sample Pages from the Seventh Grade Science-Health Guide

DANVILLE PUBLIC SCHOOLS

CAREER ORIENTATION
7th GRADE
SCIENCE - HEALTH

MAY 1976

SCIENCE

Career Orientation	Materials	Activities
1. Area of Concentration Composition of the Body	Jobs in Health Service: Medical Photographer (Cor.) Jobs in Health Service: Dental Assistance (Cor.) Where Do We Get Our Meat? (LRC) Slides (microscopic) - Cover Slips Prepared Slides: Tissues and Skin, Etc. Blood (Red Blood Cells) White Blood Cells Films (TMC): About the Human Body Nutritional Needs of Our Body	c. Investigation on the make-up of tissues. (1) Pull fiber from any raw meat (2) Place on slide using a drop of water to hold it down (3) Put cover slip on top (4) Draw exactly what you see in microscope (5) Write-up required d. Comparison of different tissues (in different areas) (1) Compare already prepared skin, muscle, bone tissue (2) Draw a complete lab drawing of each (3) Write up required on the differences 2. Make a circle graph comparing the composition of the human body with the composition of the earth's crust.
2. Area of Concentration Digestive System	Transparencies: Sets Human Physiology (7 fs.) Critical Areas of Health (2 fs. - rec.) Overhead Projector Movie Projector Filmstrip Projector Stains (iodine) to make slides - specific object show up better Copper Sulfate - test for protein Lime Water - Test for CO_2 (carbon dioxide)	3. Make a model of the digestive system out of modeling compound. Label each part and in a separate folder tell the function of each major organ. 4. Make large charts comparing the human digestiv system to some other lower animal. 5. Prepare a large chart of the digestive system indicate the pH in the organs and label the regions where different enzymes are produced. 6. Grind up the pancreas of an animal. Add the tissue to a small quantity of water and test for enzymes. 7. Laboratory comparison of two lower animals digestive systems.

Career Orientation	Materials	Activities
	Filmstrips: Your Digestion Digestive System	Example: Annelida (Earthworm) Arthropoda (Grasshopper) Chordata (Frog) Find each of the parts concerned with digesti. and be able to tell which is the most complex and why. 8. Have a surgeon visit the class and get him to explain which organs can be removed without harming individual and why certain organs referred to as vestigial are still put there (appendix) but considered useless. (Explain blockages.) 9. Visit a kitchen where a good dietician is responsible. Have her explain why certain foods are necessary for proper digestion to take place. Are all vitamins necessary for the proper function of all organs, digestive as well as others.
3. Area of Specific Concentration Respiratory System		10. Ask a respiration therapist to visit you (classroom). Find out how oxygen is used in hospital. Also plan a visit to see the equipment used by people to breathe (i.e. iron lung, oxygen tent, respirator)
	Filmstrips: How You Breathe	11. Ask an anesthesiologist to visit classroom to explain what happens when he or she puts you to sleep during surgery. 12. Get a pair of lungs from freshly killed animal (pig - sheep). Mount in bell jar. Demostrate breathing action by moving rubber diagram up and down.

Career Orientation	Materials	Activities
		13. Make a comparison of two different animals respiratory system. Be able to explain which is the most complex and why.
		14. Find out how frogs breathe and make a chart that shows the manner of their breathing.
		15. Get cancer volunteer worker to speak to class on correlation between tobacco and lung cancer.
		16. Ask a first aid specialist to demonstrate the different methods of artificial respiration and explain the advantages of each.
		17. Prepare a model of the respiratory system - show each organ involved. Ex. trachea, bronchi, bronchial tubes, etc. (Models good out of modeling compound, clay, paper mache, bread dough.)
4. Area of Concentration Circulatory System	Films: Heart, Lungs and Circulation	18. Write and present to the class a report and pictures concerning William Harvey who first demonstrated the circulation of blood.
	Filmstrips: Your Blood System	19. Visit a cardiologist (heart specialist). Get an explanation of the workings of the circulatory system. Find out specific diseases of the heart, treatment, symptoms. Also find out what machinery is involved with the diagnosis of certain diseases.
		20. Make a model of the heart using some modeling compound. Include arteries, veins, and all parts of the heart (label).

Career Orientation	Materials	Activities
		21. Prepare a written report on how the blood circulates through the human. 22. Comparison (Lab). Grasshopper - Frog. Disect each animal. Draw each circulatory system making sure when you disect the parts involved. Write-up required upon completion of assignment. 23. Disect a freshly killed animal heart - cow, etc. Find the auricles, ventricles, valves and blood vessels. 24. Visit hospital Blood Bank. Get them to explain the technique of doners and transfusions. What is necessary in order to give blood. What is necessary for transfusion on a person. 25. Set up a blood typing center. Get a trained nurse to type student's blood. Also ask her to explain the procedure and what components are necessary for each type. 26. Visit a hospital lab. See how they analyze the blood - do certain tests to check for diseases of the blood. Hemotologist is the person in charge. Get him to explain his or her duties. 27. A medical technologist does testing. Invite one to speak to your class on what the job requires, responsibilities as well as school experience. 28. Lab investigation on the make-up of both red and white blood cells. a. Take fresh blood - prick your finger

Career Orientation	Materials	Activities
		b. Place a drop on slide c. Place cover slide d. Focus under microscope e. Draw exactly what appears under microscope f. Write-up required on the differences in red and white after you conclude
5. Area of Specific Concentration Skeletal System	Films: Muscles and Bones of the Body	29. Invite an orthopedic to speak to your class on different bone diseases, breaks, malformations, general explanation of his responsibilities as a bone specialist.
	Filmstrips: Bone, Muscle and Joint Injuries How Bones and Muscles Work	30. Visit an orthopedic clinic. See doctors and assistants putting on casts, making special diagnosis. Find out what materials are used in making casts. The length of time for certain breaks or sprains to heal. What part does ligaments play in the healing or movement of bones.
		31. Let students build a model skeleton. (Learn the specific bones and be able to label them.)
		32. Make a large labeled chart of all the bones in the human body.
		33. Invite and visit a physical therapist. Get the therapist to explain what responsibilities his or her job holds. Get the therapist to demonstrate all equipment used and designate what physical ailment uses each. Time element involved in each case of a different nature.
		34. Construct a model of a muscle fiber having each specific part labeled and telling each function in relation to the entire muscle.

Career Orientation	Materials	Activities
6. Area of Specific Concentration Muscular System	Films: Muscles and Bones of the Body Filmstrips: Bones, Muscle and Joint Injuries How Bones and Muscles Work	35. Make a wall chart on humans muscular system making sure you label. 36. Lab Investigation: Muscular system of frog. Skin frog - dislodge each muscle from the sheath so you can see each muscle relaxes and tenses. Also where each point joins to a bone. 37. Prepare a comprehensive chart on the differences of: Muscles - Tendons; Ligaments - Cartilage - Bone. 38. Explain in picture form the difference in voluntary and involuntary muscle movement. 39. Invite an orthopedic to talk about the difference in a bone break and muscle strain. What takes place when you have strained a muscle. 40. Invite an internist (doctor) to tell about different muscle disorders. 41. Find out why sea divers get the bends when they rise to the surface too rapidly: How can the disease be treated.
7. Area of Specific Concentration Nervous System Doctors: Optometric Assistant Optical Technician	Films: Senses and What They Do For Us	42. Make a wall chart telling all organs involve with the humans nervous system. 43. Invite a neurologist to visit your classroom a. Ask him to explain what he does in his specific job b. Tell about the nervous system in general (structure) c. Ask about specific disorders, treatment

Career Orientation	Materials	Activities
	Filmstrips:	44. Prepare a model of a nerve cell showing all major parts.
	Nervous System Your Bodies Message Your Tasting Tongue Jobs in Health Science: Optometric Assistant (Cor.)	45. Compare the two nervous systems: Central Nervous System vs. Autonomic Nervous System
	Transparencies: Sets	46. Make a model of the brain making sure you include all major areas. The areas should have what their job should be.
	Discovering Your Senses	47. Compare the human's nervous system with that of a grasshopper or any arthropod.
8. Area of Specific Concentration Excretory System		48. Make a large diagram of the human's excretory system. Explain each organ as to the function.
		49. Invite a urologist to speak to your class. Ask what his responsibilities should be. What specific disease are there of this system, diagnosis and treatment.
		50. Make a comparison of two animals excretory systems in picture as well as written form.
9. Area of Specific Concentration Reproductive System		51. Make a chart on the reproductive systems of both the male and female (label).
		52. Prepare a written report on the function of each of the main structures located in each.
		53. Invite a gynecologist and obstetrician to visit your classroom. a. Ask job responsibilities b. The reproductive development - each stage from fertilization to birth.

Career Orientation	Materials	Activities
		54. Have students prepare a model of the different stages during the development of the embryo. 55. Invite an embrologist to explain what the job responsibilities are, why he or she chose this specialty. 56. Compare the reproductive system of the human to grasshopper or butterfly.

HEALTH

Career Orientation	Materials	Activities
Module I. How Can Pollution Affect Health? Jobs or Careers 1. Pollution Controller 2. Dept. of Natural Resources 3. U.S. Dept. of Agriculture 4. Forest Service 5. Soil Conservation Service 6. U.S. Dept of the Interior 7. National Park Service 8. Federal Water Pollution Control Administrator 9. Environmental Protection Agency 10. Ecologist 11. Allergist 12. Respiratory Specialist 13. Soil Tester 14. Researchist in Auto Industry 15. Biologist 16. Water Tester 17. Soil Tester	Books: Aylesworth, Thomas. This Vital Air Aylesworth, Thomas. This Vital Water (Rand McNally) Kavaler, Lucy. Dangerous Air (John Day) Marshall, James. The Air We Live In (Coward) Perry, John. Our Polluted World (Watts) Pringle, Lawrence. The Only Earth We Have (MacMillan) Pringle, Lawrence. Ecology: Science of Survival (MacMillan) Caillet, Greg; Paulette Setzer; Milton Love. Everyman's Guide to Ecological Living Billington, Elizabeth. Understanding Ecology (Warne) Hilton, Suzanne. How Do They Get Rid of It? (Westminister) Blake, P. Cods Own Junkyard: The Planned Deterioration of America's Landscape (Holt) Hungarfield, Harold. Ecology: The Circle of Life (Children's Press) Lewis, Alfred. This Thirsty World: Water Supply and Problems Ahead (McGraw-Hill) O'Donnell, Patrick A. and Lavaroni, Charles W. Noise Pollution (Addison-Wesley) Sound Filmstrips: 359 - World's Exhaust 360 - Our Troubled Waters 361 - The Unseen Enemy	1. Look in the school and public libraries for books about different types of pollution. 2. Study England's "smog" problem. 3. Find out Danville's environmental quality ratio. 4. Visit a water treatment plant. 5. Have a "smog alert". 6. Do tests to see what you are breathing. 7. Find out how what we breath affects people with: chronic bronchitis asthma pneumonia emphysema allergies 8. Make a list of ways individuals can cut down on air pollution. 9. Find out how many hours a day or week you spen walking or riding a bike or riding a car. 10. Collect articles from magazines and newspapers on pollution. 11. Study cities with severe pollution problems. 12. List good driving habits that may cut down on pollution. 13. Collect items to be recycled. 14.. Make an ecology ledge or poster.

Career Orientation	Materials	Activities
	362 - Our Wounded Land 363 - Mist of Death 364 - The Body Breakers 365 - How Many Are Too Many 366 - Principles of Ecology Films: Meecology - TMC Film Alone in the Midst of the Land - NBC From The Face of the Earth - King Screen Down Decibel, Down - King Screen The Garbage Explosion - EBE Heritage of Splendor - Alfred Higgins The Litter Monster - Alfred Higgins Runaround - American Lung Assn. Heritage We Guard - TMC	15. Measure how much water your family uses in a day. 16. Find examples of pollution around your school and home - suggest ways to eliminate them. 17. Estimate the loudness in decibels of: a school bell, factory, walking, etc. 18. Take pictures of pleasant sights and landscape pollution. Compare with friends and discuss how "eyesores" might be improved. 19. Invent an ecology project for each individual and the class. 20. Debate advantages and disadvantages of the steam-powered car and the electric car. 21. Fill a pail of water half full and let it sta in the classroom for several days. Add pollutants (paper, gum, grass, detergent, candy, milk carton, etc.). Is there an odor? 22. Investigate ways in which food can be polluted by unsanitary handling. 23. Make a booklet on Forest Ranger duties. 24. Make posters on fire prevention. 25. Take a trip to White Oak Mountain.

Career Orientation	Materials	Activities
Module III. How can you help personality grow? Jobs or Careers 1. Guidance Counselor 2. Psychiatrist 3. Psychologist 4. Advisor	Books: Alexander, Arthur. The Hidden You: Psychology In Your Life (Prentice-Hall) Goldenson, Robert M. All About the Human Mind: An Introduction to Psychology (Harper) Nashpitz, Joseph, M.D. Understanding Ourselves: The Challenge of the Human Mind (Coward) Books for Teachers: Allport, Gordon. Pattern and Growth in Personality (Holt) Byler, Ruth; Lewis, Gertrude; and Totman, Ruth. Teach Us What We Want to Know (Connecticut State Board of Education by the mental health materials center) Clark, Kenneth B. Prejudice and Your Child (Beacon) Erikson, Eric. Youth: Change and Challenge (Basic) Jenkins, Gladys Gardner; Shocter, Helen S.; and Bauer, William W. These Are Your Children (Scott, Foresman) Maslow, Abraham H. Motivation and Personality (Harper) Sarason, Seymour B., et. al. Anxiety In Elementary School Children (Wiley)	1. Develop a class definition of personality. 2. Find out what you inherited from your parents and grandparents. 3. List your special abilities. 4. Draw pictures of people showing color emotions for example: green with envy. 5. Discuss how emotions affect your physically. 6. List ways to drain angry feelings. 7. Write the mental health materials center in NY 8. Read books about young people who have had to cope with strong emotions of various kinds. 9. Write about a time when you were angry or fearful. 10. Write a character description of someone you know or have read about, but do not use the person's real name. See how often you used the person's actions or behavior in your description. 11. Describe patterns of prejudice. 12. Role play what may happen when emotional needs are not met. Ex.: showoff, bossy, etc. 13. List qualities you wish in a friend. 14. Have a panel discussion on how to help someone who is finding it difficult to make friends.

Career Orientation	Materials	Activities
	Films: Acting with Maturity - Coronet And Now Miguel - United World Black and White: Uptight - BFA Everybody's Prejudiced - McCraw-Hill Feud on Third Avenue - ACI Getting Ready for Junior High - BFA Goof - ACI It's Your Move: Decisions for Discussion - Coronet Parent Problems - King Screen Right or Wrong - Coronet Filmstrips: SFS-337 - Discovering the Real You SFS-338 - Becoming More Self-Confident SFS-339 - The Art of Friendship SFS-340 - The Need to Belong FS-207 - Parents are People Too Discovering Your Personality "Exploring Your Feelings" (Part I) (Guid. Ass.) People Need Each Other (H. M. Stone) Feelings About Yourself and Others (H. M. Stone) Toward Affective Development - a program to stimulate psychological and affective development. American Guidance Service, Inc. Publisher's Building, Circle Pines, Minnesota 55014	15. List contributions you make to your family. 16. List things your family does for you. 17. Write about a family tradition. 18. Analyze your handwriting. 19. List various types of stereotypes. 20. Have skits on proper introductions, taking telephone information, etc.

APPENDIX I

Sample Pages from the Seventh Grade Math Guide

DANVILLE PUBLIC SCHOOLS

CAREER ORIENTATION
7th GRADE
MATH

MAY 1976

Career Orientation	Materials	Activities
VIII. Decimals 1. Weatherman 2. Merchant 3. Sports announcer 4. Scientist	1. Graphs 2. Almanac 3. Encyclopedia	1. Develop a display showing how decimals are used, such as: rainfall statistics, prices of goods and services, times for sporting events, etc. 2. Have students find out how scientists use decimals. 3. Ask the students to find a chart of average monthly rainfall for a specific area in an almanac or encyclopedia. Then have them find the record low and high for the previous year and list the months from least rainfall to most rainfall. 4. Have members of class keep track of how much money they spend in one week, one month, and one year.

Career Orientation	Materials	Activities
IX. Percent and Its Uses 1. Banker 2. Merchant 3. Homemaker 4. Real Estate Agent 5. Insurance Agent 6. Statistician 7. Athletic Coach	1. Pamphlet: "Travels of a Check" 2. Blank checks, notes, statements, etc. 3. Sales tax rates from several states 4. Charts showing interest 5. Charts or graphs expressed in percents	1. Have students to bring statistics about any subject and make problems and riddles involving finding percent. 2. Visit to a bank or have a banker talk to the class. 3. Have students "follow" a homemaker through a busy day to determine all the times percents are used during that day. (An imaginary day) 4. Bring sales advertisements in which the discount is expressed as a percent.

Career Orientation	Materials	Activities
X. Measurement - Metric System		
1. Carpenter	1. Meter sticks	1. Have students draw pictures to show the relative sizes of metric and English units.
2. Furniture Makers	2. Rulers (English & Metric)	2. Have students practice measuring different things in the room with the rulers.
3. Carpet Salesman	3. Measuring cups in metric units	3. Have students play with the metric match card
4. Homemakers	4. Models of metric units of volume and capacity	4. Have students draw a pattern for making a bird house. (Use metric measure)
5. Nurses	5. Scales with metric weights and English weights.	5. Make up some tic-tac-toe games described in book.
6. Doctors	6. Thermometers (C & F)	
7. Scientists	7. Protractors	
8. Architects	8. Metric match cards	
9. Surveyor	9. Charts on metric tables	
10. Engineers		